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GLEANINGS

IN BEE CULTURE

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No. 1.—All sections well filled except the row of cells next to the wood; combs straight; one-eighth part of comb surface soiled, or the entire surface slightly soiled the outside of the wood well scraped of propolis.

No. 2.—All sections well filled except the row of cells next to the wood; combs comparatively even; one-eighth part of comb surface soiled, or the entire surface slightly soiled.

No. 3.—Three-fourths of the total surface must be filled and sealed.

No. 4.—Must weigh at least half as much as a full-weight section.

In addition to this the honey is to be classified according to color, using the terms white, amber, and dark; that is, there will be "Fancy White," "No. 1 Dark," etc.

BOSTON.—Our market is practically entirely cleaned up on comb honey, so that the prices are nominal. Do not look to see any change in this respect until new honey comes in. Extracted is selling still, owing to the warm weather, and we quote our market 7@8, according to quality. **BLAKE, SCOTT & LEE,**
May 12. 31, 33 Commercial St., Boston, Mass.

ALBANY.—Honey market quiet and unchanged, with light receipts and light demand. We quote white comb, 15@16; mixed, 14@15; dark, 13@14. Extracted, light, 6½@7; dark, 6@6½. **Beeswax, 30@32.**
MACDOUGAL & Co.,
May 15. 375 Broadway, Albany, N. Y.

CINCINNATI.—The demand for comb honey is nearly over; but, as the stock is almost exhausted, prices keep up. Fancy water-white brings 15@16. The demand for extracted has not changed whatever, and prices are as follows: Amber, in barrels, 5½@5½; in cans, 6@6½; white clover, 8@8½. **Beeswax, 28@30.**
C. H. W. WEBER,
May 19. 2146 8 Central Ave., Cincinnati, Ohio.

DENVER.—Demand for comb honey light. We quote No. 1 white comb honey, \$3.00 per case of 24 sections; No. 2 comb honey, \$2.00 @ \$2.75. Choice white extracted alfalfa honey, 7½@8½ per lb. **Beeswax wanted at 22@23c, according to color and cleanliness.**
COLORADO HONEY-PRODUCERS' ASS'N,
May 12. 1440 Market St., Denver, Col.

PHILADELPHIA.—Very little doing in comb honey now. Not enough sales to fix any standard price. Extracted honey moving off in spurts but little demand. We quote amber, 6@6½; white, 6½@7½. **Beeswax, 31.** We are producers of honey, and do not handle on commission.
WM. A. SELSER,
May 20. 10 Vine St., Philadelphia, Pa.

MILWAUKEE.—A summer dullness is on the honey market for any grade or kind. Small fruits prevail to tempt the taste and please the appetite. Values are almost nominal, and we can quote fancy 1-lb. sections 16@17; A No. 1, 14@16; dark or amber, nominal, 8@13. Extracted in bbls., kegs, and cans, white, 7½@9; dark, 6½@7; beeswax, 28@30. **A. V. BISHOP & Co.,**
May 21. 119 Buffalo St., Milwaukee, Wis.

NEW YORK.—Trade exceptionally quiet, and very little doing. Fancy stock is not plentiful and is sold at 14; a large supply of other grades on hand, which we are quoting at 11@13, according to quality, and in large lots make concessions from these prices. Extracted unusually quiet, and prices show a downward tendency along the line. **Beeswax firm at 30@31.**
HILDRETH & SEGELKEN,
May 21. 265-7 Greenwich St., New York City.

TOLEDO.—The prices on honey remain steady at last quotations. Fancy white comb, 17; A No. 1, 16; no demand for dark. Extracted white clover in barrels, 8; light amber, 7; dark, 6½. **Beeswax, 28@30.**
GRIGGS BROTHERS,
May 21. 214 Jackson Ave., Toledo, Ohio.

SAN FRANCISCO.—Comb, 10@13. Extracted, water-white, 7; light amber, 6½; dark 5. **Beeswax, 23.**
May 12. **E. B. SCHAEFFLE,** Murphys, Cal.

NEW YORK.—The honey market is quiet, with plenty of stock on hand. We quote extra fancy comb, 15; fancy, 13; No. 1, 10@12; buckwheat, 10. Extracted, California, 6½@8; Southern, 4½@5. **Beeswax, 31,** and wanted.
FRANCIS H. LEGGETT & Co.,
May 25. Franklin and Varick Sts., New York.

DETROIT.—Not much honey in the market, and no great demand. Prices rule about the same; possibly a little less. Prices are as follows: A No. 1, 15@15½; No. 1 dark, 11½@12. **Beeswax, 30@32.**
May 8. **M. H. HUNT & SON,** Bell Branch, Mich.

KANSAS CITY.—The supply of comb honey is about exhausted. The demand good. We quote as follows: fancy white comb, 24 sections, \$3.50; No. 1 white comb, 24 sections, \$3.40; No. 2 white and amber, \$3.00@3.25; extracted, white, per lb., 6@6½; amber, 5½. **Beeswax, 23@30.**
C. C. CLEMONS & Co.,
May 28. 306 Grand Ave., Kansas City, Mo.

BUFFALO.—Demand is light lately. Season for old honey is about over, and there will be little used until we get new. Fancy white comb, 14@15; A No. 1, 13@14; No. 1, 12½@13; No. 2, 11@12; No. 3, 10@11. Extr'd white, 6½@7; amber, 5½@6; dark, 5@5½. No. 1 dark comb, 11@12; No. 2 ditto, 10@11. **Beeswax, 30@32.**
W. C. TOWNSEND,
May 28. 173, 180 Perry St., Buffalo, N. Y.

WANTED.—**Beeswax;** highest market price paid. Write for price list.

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GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES, AND HONEY, AND HOME INTERESTS.

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No. 11.



I OWN UP that I always thought the yellow color of Italians was in the horny covering itself, instead of that covering being transparent, as I learn on p. 423. Thanks, Mr. Editor.

"IF IT IS TRUE that a colony with a young queen will not swarm during the season she is reared," etc., p. 436. It isn't true. I counted on that, and one year gave young queens to all the colonies in one apiary. They swarmed.

I THINK those souvenir sections $2\frac{1}{2} \times 2\frac{1}{2} \times 1\frac{1}{4}$, at the Denver banquet, were produced by Vice-president Harris; and if I remember rightly he told me they could be produced at only about double the cost of ordinary sections.

COMBS that have been left out all winter in this locality need no looking after the next summer. Once in a great while the moth may lay in them if covered up; but if left without any cover I never knew them to be troubled. [Same here.—Ed.]

I DOUBT as to that case, p. 443, meeting the requirements. Of course, the queen wouldn't lay in a comb filled with honey, and here was "a large swarm" with three old worker combs that "had a good lot of pollen and honey in them." If any thing of a harvest was coming in, wouldn't the bees at once fill any empty cells, giving the queen no chance in them?

I LOOKED over that wax-extractor, p. 440, and thought to myself, "Oh, dear! by the time I'd take the time and trouble to make one of them it would be more expensive than to buy a German, and probably wouldn't be as good. And it would take less skill to run the German without getting a cheese frozen on your hands." [Your conclusion for the average bee-keeper is a very correct

one; but there are some, however, who have not the dollars, but have skill, tools, and an aching void to make things. The Salisbury extractor is intended for just such people as these.—Ed.]

JAMES ROAT's plan for making holes in tags, p. 445, is not so easy as making a hole by driving a nail into the tag, and not quite so secure. I don't want the possibility of a tag slipping off when hauling, and I can very quickly draw the nail and change to another hive. [Well, now, I guess you are right, after all. There is no use in going to the trouble of making something that is not as good as a simple nail.—Ed.]

HIP, HIP, hip, hip, hurrah!

Illinois has a foul-brood law!—[This is good news indeed. There, do you see my hat sailing up in the air? Say, you could not have got this law through unless you had had a State organization back of it, and men to push the bill. We are going to try to get a similar measure through the Ohio legislature, and a good example is set us by Illinois, which will be worth much to us.—Ed.]

THOSE STAPLES that fasten bottom-boards to hives, p. 430, I use diagonally instead of vertically, slanting in opposite directions, each one slanting toward the center of the hive at an angle of perhaps 25 degrees. A little more firm against sliding back or forward. If you don't happen to have staples, pieces of tin $3 \times \frac{1}{2}$ inch answer very well with a heavy tack in each end. [Come to think, it is our practice to drive the staples diagonally; but I forgot to explain to our artist that little kink.—Ed.]

IF YOU DON'T like that smoker-hook, p. 432, you can throw it away, just as I did years ago. I've often lost my hive-tool when it wasn't tied to me, but never a smoker. I don't want it hanging on the hive with the chance of smoking the bees automatically, even if it wasn't any in the way. [We send along a hook because a number call for it. It does no harm, and is very often a great convenience. Take my advice, and put the hook on as directed; and if you do not vote it is a great convenience I shall miss my guess.—Ed.]

THAT TRICK of having pieces of section under cover for ventilation when hauling, p. 430, is quite a scheme. Still better is it to have bottom-boards two inches deep, giving all the ventilation necessary at the entrance. I use only two staples for fastening cover, one at each side. [But very few use bottom-boards having a space under the brood-frames two inches deep. I suspect the majority of bee-keepers would not use so much space. It is, therefore, necessary to provide a little ventilation at the top where the entrance is only one inch.—ED.]

TRY THIS: Take a little board and fasten on top, at each corner, a piece of section $\frac{1}{8}$ thick. Take honey or molasses mixed with Paris green, and, if necessary, add enough flour so it can not possibly run, and put it on the board; then cover over with another board. Place this in, on, or about a hive, and ants and cockroaches can enjoy it without the possibility of a bee getting to it. [Your plan is a good one, but I did not suppose that cockroaches could go through a space only $\frac{1}{8}$ in. wide. Mr. E. F. Phillips, referred to elsewhere, thinks they can.—ED.]

CLIPPING, p. 429, is just as I do it, only, instead of holding the queen as in Fig. 3, I have thumb and finger each side of the thorax—perhaps a little less in the way of the scissors, especially as nowadays I use a pair of common pocket scissors with blades $\frac{1}{4}$ inch wide—handy to have always in the hip pocket; and after trying them thoroughly I really believe I like them better than lace scissors. [But, doctor, aren't the wings of the queen located more on the sides of the thorax than on the top? If you put the thumb under and the finger over, can you not make a closer cut with the scissors? Just try it and see if I am not right.—ED.]

THAT bad smell in August, mentioned on p. 447, reminds me that some years about that time there has been a very offensive smell all through the apiary upon opening a hive, and others have reported the same. I don't know the cause, but it soon disappears—probably caused by some plant on which the bees were working. For the past two or three years we have been greatly annoyed in the home apiary by the presence of carrion plants, looking a good deal like toadstools, and making one end of the apiary smell just as if a dead animal were there. We have done a lot of digging, but they're hard to find, and as hard to get rid of as foul brood. [Carrion plants do not grow around here, for which I am thankful.—ED.]

"STAND IN front of the hive," when using a smoker, p. 432. I sit at the side—live longer that way. Whether the smoker is held in the right or left hand at the start depends upon which side of the hive, the hives being in pairs. When taking off the cover the smoker is oftener in the left hand. Where the smoker is set down depends on the wind, for a very little breeze will send

the smoke over the hive if the smoker is in the right place for it, and I don't want the bees smoked by the wind. [You did not quote the whole of my sentence. I said, "Stand in front of the hive with the entrance at the left." My general practice is the same as yours, with the exception that I may stand or sit. If the smoker rests on the ground, the wind will but rarely make any trouble.—ED.]

SOME SEEM to think that, with the improvement of the tin binding, smokers should still have as stiff springs as ever, saying that, with the weaker spring, the hold is unreliable, the smoker almost slipping out of one's fingers, and that the smoker being made mostly for strong men should have a strong spring. Isn't that "slipping out of one's fingers" only seeming? There was no complaint that springs were not stiff enough before the adoption of the tin binding, and there is no question that the tin binding gives a much stronger hold. If the stiffness of the spring is reduced in proportion to the increased grip given by the binding, it can not slip out of the fingers any more than it did before, although the lighter grip necessary might at first make it seem so. The stiffness of the spring is to be proportioned to the weight of the smoker, not to the strength of the user. Might as well say that a stronger man should have heavier hives, covers, etc.

YE EDITOR seems to be getting a mania for going into little things, giving minute details as to how they are done, things that it would seem every one ought to know without being told. Good! It's a splendid mania. It's wonderful how we can go on year after year doing little things the wrong way if no one tells us better. I think I'm something of a genius in that direction. Years ago I used wide frames with eight sections, holding them out at arm's length to brush off the bees. It took me two years to learn to rest one end of the frame on the front of the hive, making the work only a fourth as hard. [I am interested in little things, because I am doing those little things myself. I am constantly watching for short cuts; and when I find some one has a better way than mine, I like to show it. I think no harm comes from illustrating the familiar kinks—familiar to us at least; for by so doing we may show new tricks to our brother-man.—ED.]

I ONCE SAW a man putting on his right shoe, pulling the front strap with his left hand and the hind strap with his right hand. I laughed, and told him he had the wrong hands. But he was so pigeon-toed that his way was best for him. I thought of that when I looked at that picture of holding the smoker, p. 432. I may be pigeon-toed in my hands, but I hold the smoker just the other way—fingers on the side of the bellows next the stove. When walking, my hands hang naturally with palms backward, and to hold a smoker as in the picture would give my wrist a decided twist. [I do

not know whether your arms are "pigeon-toed" or not; but it seems to me very awkward, at least, to hold the smoker with the fingers next to the smoker-cup. If you sit down, as you explained, the axis of your arm will be on the line with the top edge of the smoker-bellows. Then surely you want your thumb next to the fire-cup, and your fingers on the outside of the bellows. Now, then, suppose you straighten up; your smoker hanging as it were on a pivot between your thumb and fingers will always point toward the combs without twisting the wrist. The thumb next to the stove will come more natural if you try it that way. —ED.]

I THINK — and perhaps "the wish is father to the thought" — that I may live to see the day when it will be cheaper to use an automobile than a horse for visiting out-apiaries. Can't you encourage us just a wee bit, Mr. Editor, by telling us that you can get a good auto to-day for a good deal less money than you could a few years ago? It would be just fine to be all through with the anxiety about horses scaring and being stung. And yet — and yet — I'm afraid I couldn't read most of the way on an auto as I do now. [I do not know that I can give you a great deal of encouragement that your ardent wish will be gratified. If you will eat lots of beefsteak, and do not work too hard, I think you will see the day when you can actually buy an automobile for the price you pay for a horse and buggy. Already the operating expense is far below that of a horse. We hear a great deal about expensive repairs, and they are expensive if one does not understand something of machinery. The process of simplifying the auto is going on all the time, and the repair item will grow less. Already there is a very good machine offered at retail for \$375; quite a number at \$550, and a host of them at \$750. The cost of operating a gasoline-vehicle is about a half a cent a mile, of the run-about type. Figure up the mileage of your horse, cost of keeping, including the labor every day, or two or three times a day, whether you use it or not, and see where the figures are. When the automobile stops, the only expense is the interest on the investment, and repairs, and these last may or may not be a large item. It can lie idle six months. My auto is kept in a little room, and sometimes during bad weather it stands for days without any one going near it; and yet it is ready for me almost instantly when I am ready for that. For example, Mr. J. B. Hains, of queen-rearing fame, the man who got up the Hains feeder, was visiting us a few days ago. We suddenly discovered that his car was due in three or four minutes, half a mile away, and he had several awkward packages to carry with him. It did not occur to me for a moment that I owned an automobile. We sent a man along to help him, when it struck me I might as well get out my machine, which I did instantly. I caught up with him with his bundles, and

rushed him up to the car in time to catch it. He was out of breath, and tired, close on to 70, and a run to catch the car would have been a severe tax on him. What a relief it was to him to be picked up and whirled up town in a jiffy!

Now, answering your question a little more specifically, the price of automobiles has dropped some \$200 or \$300, on runabouts, this year, already. Millions of money are being poured into the industry. It will not be long before Yankee genius will be able to turn out a machine so cheaply that every one can have one who can afford a horse and buggy and a barn. No, throw the barn out of the account. But whether the automobile will be able to go over any roads that a horse and buggy can is doubtful. Good roads and automobiles *must* go hand in hand. There is no use in buying an automobile *unless* you can have better roads than where the mud is half axle-deep. —ED.]



Earthquakes, floods, volcanoes' blasts,
Drouths, and famine sore,
Massacres of men by men,
Now sadden every shore.



Albert Blume, a young farmer living near Clinton, Penn., had a hive of bees in his cellar. It became too damp in the cellar, and he moved the hive to his bedroom. The other morning the bees swarmed, and before Blume, who was clad only in his night-clothes, could escape he was stung about the head, face, and body.



The *Journal of Antiquities*, of Stuttgart, Germany, reports that, among other objects of curiosity found in the ruins of Pompeii, destroyed in the year 79, is a hive filled with honey so well preserved in the cells that the observer can hardly believe it is not fresh. Honey 1824 years old ought to be considered ripe enough, sure.



The *Leipzig Bee Journal* says the wounds caused by bee-stings should not be neglected. When a bee-man is stung he pulls the sting from the wound, and generally the event is forgotten. He often has no time for a nearer investigation and disinfection of the wound. Recently such neglect was nearly fatal in the case of a certain bee-keeper. A Mr. K., while hiving a swarm, was stung in the little finger of the right hand. As a general thing, after the removal of the sting, he allowed the trouble to

pass out of mind; but in this case, after a short time, the finger swelled up, then the hand, then the forearm. Severe pain prevented him from sleeping, and his physician was obliged to adopt active measures. By neglecting to purge the wound thoroughly he brought on blood-poisoning.

❖

E. T. Abbott says, in *Busy Bee*:

A writer in the *Drovers' Journal* advises placing empty hives in the bee-yard in the location where they are to remain, in advance of swarming time, so that the swarms may be hived without delay as soon as they leave their old quarters, and says that much trouble and often loss of bees may be averted by this timely precaution. It seems to us that this is likely to cause more loss of bees than any thing else. The hives should be kept in a cool shady place until you are ready to hive the swarm. A swarm placed in a hive that has been standing in the sun is almost sure to leave it. If you do not want your swarms to go to the woods, keep your hives in the shade until the bees are ready to occupy them.

Mr. Abbott says further:

Every bee-yard should be equipped with a few drone and queen traps. They may seem quite costly, but even one can be so manipulated as to save a deal of trouble in hiving swarms. A swarm-catcher and a good long pole is another tool which will be found to be very valuable during May and June. These can be made by the bee-keeper, or bought of supply-dealers, as suits his fancy and his pocketbook.

❖

Considerable excitement prevails in Germany among the bee-men over the statement of Mr. Freudenstein, who says, in the *New Bee Journal*, that nectar is nothing but sugary water, and, consequently, a bee-keeper has nothing to do but to give sugar to the bees in order to get a good crop of honey. It is said that this assertion will be warmly contested at the next apicultural congress at Strasburg, in July. This convention, by the way, will be a big thing, and attracts far more of the public attention there than any bee convention in this country. Some things connected with it we hardly consider conducive to good morals here. A French journal before me says, "A lottery of 50,000 tickets, at 50 pence each, will not only furnish the exposition committee the means of purchasing a large part of the objects represented, but it will afford the buyers of tickets a chance to secure some fine collections on exhibition." Overlooking all that, however, the program for the whole week is on a grand scale, backed by the government, and will be a notable event. The governor of Alsace-Lorraine will preside over the festivities. At the congress, in spite of his 93 years, Dr. Dzierzon will take part. In fact, the whole event is in his honor. He will speak on "the best hive." Those Europeans know nothing about Sunday as we understand it, but they know how to honor a great man when they find one. Langstroth's comparative obscurity in this country would have been unknown in Europe.

Since the above was in type, the following program has come to hand from Mr. J. Dennler, President of the Press Committee:

1. Dr. Dzierzon, Lowkowitz: How should a hive be constructed to meet all requirements of the bee-keeper?

2. Teacher Burckhardt, Weinsberg. The development of the brood in spring, on basis of periodical investigations in different hive systems. Thesis I: The brood development is more favorable in hives with ample dimensions than in those with small ones. Thesis: Steps ought to be taken to introduce larger dimensions generally; the indication, "normal measurement," should be changed.
3. Bassler, Prague. How have we to look at bee life in the light of modern science?
4. Rev. Klein, Enzheim. Feed paste and female bee-larvæ
5. Editor Reidenbach, Rebhorn. The latest in the battle with foul brood.
6. Langer, Prague. The recognition of bee honey with serum.
7. Editor Bohmenstengel, Busslar. The perambulating meeting and its reform.
8. Rev. Grabener, Hoffenheim. The education of the bee-keeper.
9. (?) In matters of the protection question regarding honey.



ABOUT QUEEN-REARING.

"Are you very busy to-day, Mr. Doolittle?"

"No more than usual at this time of the year, Mr. Jones. What can I do for you? It is always a busy time for the bee-keeper after the bees are well under way at brood-rearing."

"Yes, I supposed so. But I wanted to have a little talk with you about rearing queens. I want to raise some this summer, and raise them at just the time I wish them; but I see it is stated that queens reared by natural swarming are generally superior to those reared from eggs laid in worker-cells. Is this a claim beyond reasonable question? If so, how do our queen-breeders secure the thousands they send out?"

"It would be but reasonable to infer that a plan of queen-rearing which has brought vigorous healthy bees all the way from before Samson's time down to the present, in their native haunts, must produce queens that were very good, to say the least."

"That is all right; but do you actually think that an egg laid in a queen-cell is any better than an egg laid in a worker-cell?"

"To say that an egg laid in a queen-cell by the same queen is a better and more vitalized egg than one laid in a worker-cell, is something that very few, if any, would be ready to assume. From years of close observation I can not think that there is any difference in favor of the egg, no matter where it is laid, whether in queen, worker, or drone cells, providing said egg is properly fecundated."

"What is the difference then?"

"To my mind, the difference comes in the treatment of the innate life of that egg after it has come to the larval form. In

natural swarming a larva intended for a queen from the time it first breaks its shell is nursed *all its larval life* with a fondness equal to any mother's fondness for her child; and in this nursing we have the part which plays for good or evil in the future queen."

"What do you mean by that emphasized, 'all its larval life'?"

"I mean that, from the very outset, the larva from an egg laid in a queen-cell by the mother queen is fed with royal food, and nursed for a queen; while with an egg laid in a worker-cell, the larva is fed and cared for a longer or shorter period, as a worker bee, and not for a queen."

"Yes, I see. But is the food given the queen larva at the outset different from that given the worker larva when it is first hatched from the egg?"

"I have never been able to discover that it was, and I think that the majority of our best bee-keepers of to-day believe that the food given all larvae for the first 48 hours of their existence is the same."

"That being the case, then it would seem to me that the matter rested on the conditions rather than in the matter of food."

"That is the way I look at it; and if by any means we can secure a like condition for the just-hatched larva from an egg laid in a worker-cell, we can secure a like-conditioned queen."

"Do you think that the majority of queen-breeders secure these like conditions?"

"I do. I have not had the experience of some in receiving from queen-breeders queens of which 90 per cent turned out poor, or 'as worthless as so many house-flies' as one writer puts it. I have rarely received anything but first-class queens in all I have purchased; and from these queens purchased, and from what I know of several of our queen-breeders, I have not a single doubt that thousands of the queens sent out by queen-breeders are every whit as good as those reared under natural swarming, for I am satisfied that the most of our queen-breeders to-day spare no pains to bring about an equally favorable condition to that under which natural swarming is conducted, while rearing their queens. Don't misunderstand me, and think there is no danger of producing poor queens, for there is. Much poorer queens than those reared under natural swarming can be produced, and will be, unless the work of queen-rearing is rightly done; and it was because that, in the infancy of the queen-rearing business, very little attention was paid to the condition of the colonies while they were feeding the embryo queens, that the subject of where the eggs were laid was advanced."

"Then you think I can raise good queens when I wish them, do you, even should I try it outside of the time when the bees are swarming?"

"Others have done this; and to say otherwise in your case would be to say that you were not equal to the general average of our queen-breeders."

"I suppose you do not wish to take time now to tell me all about how good queens can be reared at any time of the year?"

"I am always willing to do almost any thing to accommodate; but to take the time to tell you all about rearing good queens at this busy time of the year would not be reasonable, and would be out of the question in this department, even were I inclined to spare the time to do so. Nearly all of the bee-books treat on the subject of queen-rearing, and there are two or three books devoted especially to that branch of apiculture. Send to the publishers of GLEANINGS for their book list and then select such as seems good in your sight. After having read the book selected, if there is anything you do not understand regarding queen-rearing, then I shall be glad to talk with you on the subject, trying to make it as plain as possible. But before parting, allow me to say that God placed man at the head of, and gave him control over, all animate nature, and thus it has come to pass that he has been enabled to equal, if not to improve, every thing which he has turned his hand to; and the rearing of queens is no exception to this rule. And if you will study up on this matter by careful reading, I have not the least doubt but you will succeed as well as and perhaps better than those who have come before you in the business."



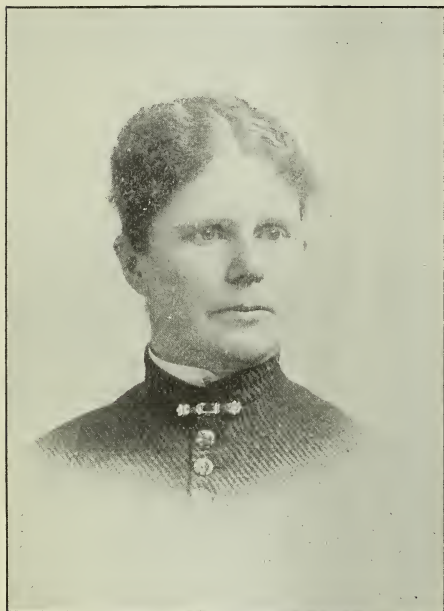
OUR latest advices from California seem to indicate that the season is not going to be as prosperous there as was at first expected. But there will be enough honey to sweeten up the bee-keepers at the big convention that is to be held at Los Angeles. Do not forget to make your calculations to attend that grand meeting.

WE were threatened with a drouth during the fore part and middle of May; in fact, no rain fell from the 3d to the 22d; but on the latter date a good shower arrived just in time, and none too soon, to revive nature. A few light showers have followed since, up to to-day, the 26th, and the prospects for a good crop of clover were never better. Indeed, I never saw more white clover in the fields than now. The heavy rains of last season developed an enormous growth of the plant, and the beautiful little white heads are dotting the fields everywhere.

MISS LODEMIA BENNETT, of Bedford, O., died on the 16th of last April at the residence of J. B. Hains. Miss Bennett was a

skillful queen-breeder, rearing queens at one time for the A. I. Root Co. and for Mr. Hains. As a sample of what she could or did do, she once grafted *forty-eight* Doolittle cell cups on one frame. They were *all* accepted without a miss, and *every one of them hatched a queen*. This breaks the record so far as I know.

She was also a successful honey-producer, and occupied a prominent position in our State Bee-keepers' Association meetings. She was twice elected Secretary of the Ohio State Bee-keepers' Association, and was secretary of the old defunct organization at the time of her death.



MISS LODEMIA BENNETT.

She was for many years a contributor to the Cleveland *Plaindealer*, one of the largest daily papers published in Ohio. She was an active and enthusiastic worker in the temperance and other reforms. A Bible student, she arranged many lessons there from for her co-workers in the temperance cause. Some years ago she used to write for the various bee-journals; but during latter years ill health compelled her to relinquish some of her activities.

THE NATIONAL CONVENTION AT LOS ANGELES; WHY BEE-KEEPERS SHOULD GO.

LOS ANGELES, CAL., is to be the place of the next meeting of the National Bee-keepers' Association. The time set is August 18—20. The Executive Committee, in deciding on this date and place, based their decision on the low railroad rates in force at that time on account of the encampment

of the G. A. R. in San Francisco the same week.

It was suggested that we make the Santa Fe route the semi-official one of the bee-keepers. A tourist sleeping-car could be made up largely of bee-keepers, to start from Chicago in time to give a day's stop-off at the Grand Canyon—probably the most remarkable scenery of the kind the world affords. The train is then to go on to Los Angeles, fitly named the "City of the Angels," one of the most delightful cities I have ever visited. It is not delightful because of its architecture, but because of the surrounding scenery and its bracing climate. Cool evenings and warm days make living there most enjoyable.

Board and lodging can be secured at very reasonable rates. In one of the good hotels of the city I secured a room at 25 cts. a night, and board at 25 cents a meal, and that the very best. There were other places where I could have had accommodations still cheaper. The bee-keepers there are a most hospitable set of fellows, and I shall not forget some of the pleasant hours spent with some of them.

This is a good year for California; and if one desires to see the real extent of bee-keeping possibilities in one of the fairest climes the world affords, let him take this trip. Do not go simply because you may get enough at the convention to pay you, but because your horizon of life will be enlarged, and because, years afterward, you can live over again (in memory) one of the most delightful trips you ever took. Just think of it! You can take a car in the morning in Los Angeles, and go to the coast and take a sea-bath. You can then come back to Los Angeles, and eat strawberries and pick roses. In the afternoon you can go to Pasadena, a little city that is even more beautiful and more perfectly laid out than Los Angeles, where the great wealth of the East has been poured. Indeed, it is almost a heaven on earth. An hour's ride will take you up into the mountains where you can get above the clouds—yes, may take a sleighride and enjoy a good snowballing. Just think of it! a sea-bath in the morning, strawberries and roses at noon, a sleighride above the clouds, and snowballing, *all in one day!* Talk about going "from the sublime to the ridiculous"! This beats any thing for a rapid change of season and scenery. While this is possible in the spring of the year, it may not be possible in August.

But one of the most thrilling trolley-rides (dangerously near precipices) that can be imagined is to take an electric car and actually glide above the clouds and look down upon the valley spread out like a panorama thousands of feet below. One can see the ocean, and the cities of Pasadena and Los Angeles, and all the small outlying towns, with their fine orange-groves and all the beautiful luxuriance of a tropical climate. In short, he can see typical Southern California.

Bee-keepers, if you fail to take in a trip of this kind (and it is the opportunity of a lifetime) you will be missing one of life's greatest pleasures.

The round trip from Chicago is \$50.00. Rates in the tourist sleeper will be very low. I do not remember just now what they are; but particulars can be obtained, I think, by applying to Sec'y G. W. York, 144 Erie St., Chicago.

NEW MEN ON THE BOARD OF DIRECTORS OF THE NATIONAL.

MR. W. A. SELSER, of Philadelphia, Pa., the expert honey analyst and chemist, and Mr. Udo Toepperwein, of San Antonio, Texas, one of the leading bee-keepers of that section, have been appointed on the Board of Directors of the National Bee-keepers' Association, to fill the vacancy caused by the death of T. G. Newman and the resignation of A. I. Root. No better men could have been selected. A. I. Root has felt for some time that younger men, more in touch with the bees, and more interested in the work of the Association, should be on the Board; and with that end in view he sent in his resignation, to take effect as soon as his successor should be appointed.

THE DROUTH IN THE EAST.

THERE has been a protracted drouth in some sections of the East—notably in New York and New England. The following letter from a correspondent in New York will explain itself:

Mr. E. R. Root:—This is our 45th day without rain—the longest rainless period since 1791. Clear and cold to-day, May 29. Honey prospects, none. Clover is all dried up, and bees barely living; soil too dry to prepare for buckwheat. A few scattering swarms during fruit-bloom. Unless rain comes soon we must feed or move. J. D. BIXBY.

Guilderland Center, N. Y.

The condition of Mr. Bixby's locality seems to be more severe than in most places; but at all events, the rain has held off west as well as east for such a length of time that the amount of clover honey will probably be cut down very considerably. But the drouth is broken now, east as well as west. The fearful storms that have prevailed in the West seem to be working eastward; and if it is not too late there will be a fair crop of clover honey in some localities. Clover has not been injured in Ohio.

"PARTHENOGENESIS" AND ITS UNSOLVED PROBLEMS UNDER SCIENTIFIC INVESTIGATION AT MEDINA.

THE Home of the Honey-bees is especially favored in having with us Mr. E. F. Phillips, of the University of Pennsylvania, a thoroughly trained student in zoology, to work out a little more fully the problem of parthenogenesis, for there are still some unsolved points about it.

He has studied the subject of parthenogenesis more thoroughly in relation to other insects, and bees in particular, than

perhaps any other man in the country. He comes highly recommended, bringing with him the best apparatus that the University affords, for pursuing his scientific investigations. We, in turn, have placed at his disposal bees, nuclei, observatory hives, and told our men to give him every assistance possible. He is taking nothing for granted, but takes a nucleus hive and sits down and watches the bees hours at a time. That you may know a little more about him, and something of the importance of his work, I am placing before you an extract from a letter from Dr. E. G. Conklin, Professor of Zoology in the University of Pennsylvania. He writes:

Mr. E. R. Root:—Permit me to recommend to your favor Mr. E. F. Phillips, one of my graduate students, and the holder of our Fellowship in Biology for the coming year. Mr. Phillips has undertaken, at my suggestion, to go over the whole subject of parthenogenesis in the honey-bee in the light of new theories and observations, eliminating, if possible, certain sources of error which are found in the works of the older students of this subject, and considering many features of the problem from new points of view. Mr. Phillips is a clear-headed, well-trained man, and I consider it highly probable that his work will yield valuable results. He proposes to offer this work, if it should result favorably, as his Ph. D. Thesis, in which case it will be published in full.

Philadelphia, April 20.

E. G. CONKLIN.

Mr. Phillips is desirous of securing some drone-laying queens; but fertile workers caught in the act would be regarded by him as a special prize. In order to work out this problem of parthenogenesis he needs material. While he is drawing on our 400 or 500 colonies, yet he needs more than our bees at present supply. Fertile workers, virgin queens that lay drone eggs, drone-laying queens—anything in this line—will be most thankfully received. Any of our readers who have any thing of this nature will please report to me immediately, and I will let you know whether it is something he can use in his scientific investigations.

MOVING BEES TO OUR OUTYARDS.

AS many of our readers know, we have something like 1000 colonies, all told, 500 of which are in Cuba, and 500 in and about Medina. To keep them secure from the depredations of thieves or miscreants bent on mischief, the bees at our outyards are hauled home in the fall. Early in the spring or during the early part of apple-bloom they are taken back. The illustration on page 495 shows one of our loads of bees going to the Harrington yard, about $1\frac{3}{4}$ miles directly south of the home yards, where it will be run primarily for honey and for testing certain of our breeders for honey. Those queens that show up the best out of our selected stock will be reserved for the next season for queen-mothers for the great bulk of our queens. Last year one breeder having only a nucleus to start with filled four stories of extracting-combs with honey and bees. Considering the start that she had, she so far outstripped the other colonies that I marked on the hive-cover, "\$50 queen. E. R. R. says do not sell."

In the illustration there are 54 colonies, the great bulk of which are in one-story chaff hives. There are a few jumbos—in fact, one is seen close to the driver's feet. Mr. Bowman, the teamster, although not a bee-keeper, is not afraid to take hold and help in the bee-yard when necessary. He is of that stocky muscular build that enables him to lift hives to and from the wagon with no very great effort. Mr. G. W. Phillips, the head man of the apiary, recently from Jamaica, stands in the midst of the load. On this occasion we took the 54 colonies, set them under some large apple-trees in groups of four and five, a little south of the farmhouse where myself and wife expect to spend the summer. As I go back and forth I can look after the bees and enjoy the fun and the work of getting a crop of honey as well as testing for breeders, at the same time gather fresh facts from experience.

The Harrington location is our best. We own quite an extensive piece of woods made up of old basswoods just adjoining, that have never been cut out. The farming country round about is rich and productive; and I have noticed that the bees in this yard will gather honey, oftentimes, when those in others will be robbing; so if there is any honey to be had, this place is eminently fitted to test out honey-queens.

Our Mr. Bowman, the teamster, and Mr. Phillips, after disposing of their load at the yard, as shown in the engraving, went on about two miles further and picked up another yard of bees which I had previously visited with the automobile, and purchased. An old farmer had become tired of the business, and wanted to sell out. Now we have a clean territory all to ourselves.

Our basswood yard, a mile and a half north of us, will be devoted mainly to queen-rearing. Instead of having 400 nuclei *all in one yard*, all requiring to be fed at times, we now have them in two yards where the bees will have more opportunity to gather honey from natural sources. While we can get good queens by feeding, it is a great deal more work, and more expensive. A larger percentage of the queens can be mated successfully when honey is coming in than when the individual nuclei have to be fed.

DEATH OF JOHN NEBEL.

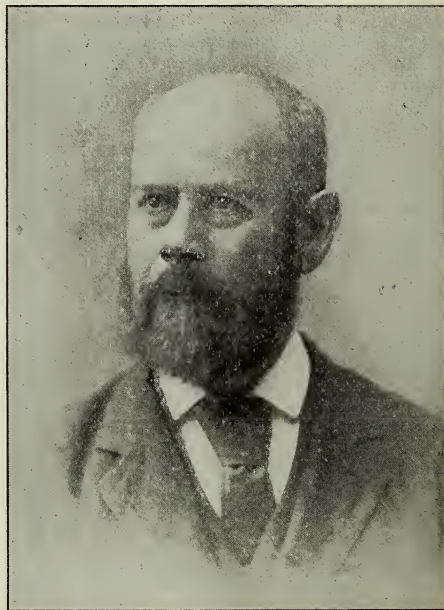
ANOTHER one of our old veterans passes off the field. This time it is our friend John Nebel, familiarly known to bee-keepers who have bought supplies of him for many years at High Hill, Mo. He was a man of strict integrity, well liked, and loved by all who knew him. We have obtained a brief biographical sketch from a member of the family, and take pleasure in presenting it herewith:

John Nebel, aged 69 years and 6 months, died very suddenly of rheumatism of the heart at his home in High Hill, Mo., May 5, 1903. He was a prominent and

highly respected citizen of High Hill, the leading lumber-dealer, also conducting a lumber-yard in Jonesburg, Mo.

He dealt extensively in bees and bee-keepers' supplies, being an active member of the North American Bee-keepers' Association since its organization.

Mr. Nebel first commenced with bees on a small scale in 1870. In 1880 he went into the business in an extensive way, uniting the supply department with it in 1888. He had at times as many as 300 colonies. He took 10,000 lbs. of honey in 1886 from 123 colonies, spring count, and increased to 183 that year, besides selling many queens. April 23d, 1903, he went to Moberly, where he assisted in organizing the Missouri Bee-keepers' Association, being elected its president. He was taken sick while at Moberly. On his return home he took to his bed, where he remained until his death. He ate breakfast on the morning of May 5, after which he lay down to sleep from which he never awoke. The funeral services took place at Mount



JOHN NEBEL.

Pleasant Cemetery, near High Hill, conducted by his son-in-law, G. K. Keler, under the auspices of the A. F. and A. M. of Jonesburg.

High Hill has lost a good citizen; the bee-keeping fraternity a friend; a wife, a kind husband; and four children a loving father.

A friend who knew Mr. Nebel well has also written this of him:

I have been acquainted with Mr. Nebel but a short time, yet he seemed like a father to me. I began trading with him in 1900, and have bought all my supplies of him ever since; and last year he sold a number of queens for me which I saved up from swarming-cells during the unprecedented display of the swarming propensity of my bees. I know he was a good man—genial and kind in all his dealings, and was sociable and ready at all times to give good advice. No one knows how I appreciated him. I can now appreciate more than ever the mournful statements of the journals regarding the veterans. Our Missouri State Bee-keepers' Association had just sprung up, and we had elected Mr. Nebel as president for the ensuing year. There was not a dissenting vote cast. Every member present voted for him at the convention; and, besides, I had over forty votes for him through the mails from parties who could not attend. W. T. CARY,

Sec. Missouri State Bee-keepers' Association.

TRADE NOTES

BY E. R. ROOT.

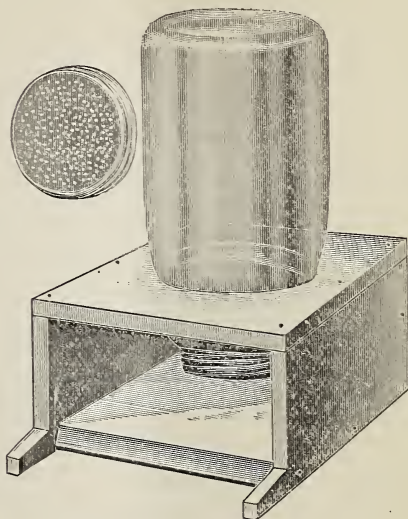
JUMBO EXTRACTORS DRIVEN BY POWER.

We are now building jumbo machines of eight-frame capacity, geared up for power. The illustration herewith shows one of the machines. It has the regular Cowan principle for reversing, and is built strong in every way. As will be noted by the handle near the pulleys, it has a powerful street-car band brake, so that the machine can be stopped almost instantly, even from a high rate of speed. This particular extractor is designed to be driven by means of a gasoline-engine. We have also made arrangements whereby these engines can be supplied with the machines. Gasoline power is much cheaper than any thing else. The first cost is much less, so also the cost of operating.

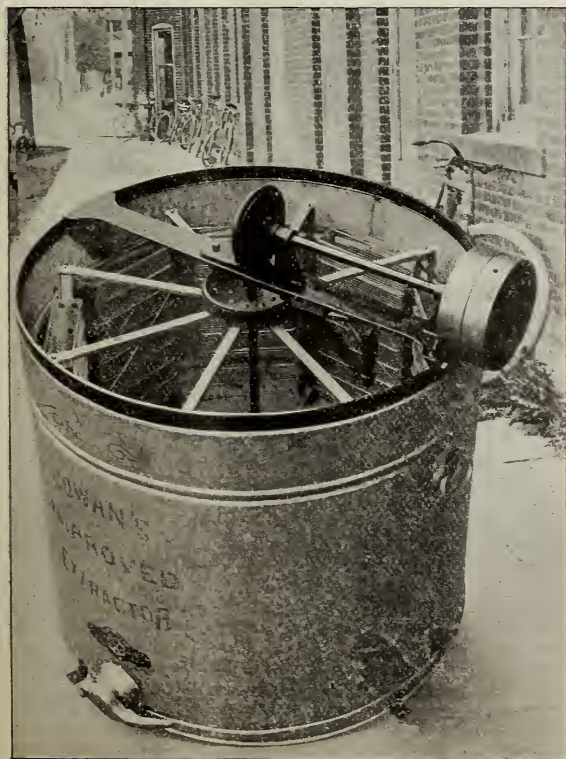
THE IMPROVED BOARDMAN FEEDER.

Very recently we made an improvement on what is known as the Boardman entrance feeder. The old type of this feeder was on the Hains atmospheric principle. This at

times was unsatisfactory for the reason that, if the can of syrup were out of plumb, the syrup would run over and leak. We final-



THE BOARDMAN FEEDER WITH NEW PERFORATED CAP.



A JUMBO COWAN POWER-DRIVEN EXTRACTOR.

ly, at considerable expense, constructed a die that would make exceedingly small holes in the cap of an ordinary Mason jar, carrying out in effect the atmospheric principle first applied to bee-feeders by the veteran E. France, father of N. E. France, General Manager of the National Bee-keepers' Association. These small perforations in the cap let out the feed only fast enough for the use of the bees. If the syrup is made properly there will be no leakage. The advantage of this feeder is that it can be placed at the entrance of any hive; and as one goes down the hive-alleyways he can determine how fast the bees are taking feed, and whether the feeders are empty. With a wheelbarrow-load of filled cans he can very easily remove the empty ones and put filled ones in their stead. For stimulative feeding in spring, there is nothing better, and especially for a queen-breeder. We use it regularly on our queen-rearing hives to keep up the general prosperity of the colony, for to get large well-developed cells—that is, providing honey is not coming in from natural sources—the colony must be highly prosperous. When feeding nuclei we

take a Mason jar and put the top through a hole of the right size in a thin super-cover. This puts the feed directly over the cluster. An upper story or cap is then put on top of the hive; and when the feed is exhausted, all one has to do is to lift off the cap and put a filled can in its place.

Your dealer will be prepared to furnish these caps to fit any Mason jar. This makes the expense of this kind of feeder merely nominal; for every family is supposed to have, in the spring at least, a large supply of empty Mason jars that can be utilized for this purpose.



SHALLOW HIVES.

A Bit of Experience.

BY E. N. WOODWARD.

I am wondering what will be the result of all this talk about shaken swarms, shallow hives, narrow starters, full sheets of foundation, and all the confusing problems of this new system of forced swarming. I suppose that many bee-keepers are planning and expecting great success along this line the coming summer. I don't wish to enter a protest against any system of management that has proved to be a success in the hands of a skillful bee-keeper; but I should like to speak a word of caution to the inexperienced, for I know how apt we are to follow some new idea or some new theory, without knowing exactly where we are being led or what the result may be. I believe that forced swarming (so called) is a move in the right direction if a person has a large number of colonies, and wishes to produce comb honey; but we must keep close to nature, otherwise we are making a serious mistake. To prove this, I wish to bring in my own experience.

About five years ago an article in one of the bee-journals led me to form the plan of hiving all of my new swarms into shallow hive, with foundation; and the plan looked so plausible to me that I constructed quite a number of such hives, having them ready for my first swarms, which usually come soon after white clover comes into bloom; and so, with thoughts of an abundant harvest, and with visions of a long row of supers towering high, I hived my best swarms into these shallow hives, placing double supers with 48 sections on top, with queen-excluder, and then waited for results.

Well, I was having my way so far; but what did the bees say about it, Dr. Miller? In the first place, they held an indignation

meeting, and then for two successive days swarmed out, losing valuable time when white clover was in full bloom; and then they loafed awhile, and finally began to dwindle; and when the honey season was over I had a few weak colonies and very little honey.

I very soon began to apprehend that I was making a mistake, and so I hived the rest of my swarms into regular Dovetailed hives, full depth, contracted with dummies to correspond to the size of the swarm.

Shall we consult the bees again? Their actions speak louder than words, for they immediately went to work with a vim, with no thoughts of swarming out, and I soon began to tier them up; and at the end of the season many of my new swarms hived upon the deeper frame gave me 100 lbs. of as fine honey as was ever placed upon the market.

The conclusion that I came to is this: That a shallow frame and hive is not in harmony with the natural instinct of the bee; and, forced out of their natural form and condition, they fail to do good work; but when placed in a hive which gives them room to cluster in natural form, and when their new home is made agreeable to them, they very seldom swarm out, but will very soon adjust themselves to their new surroundings, and the whole machinery of the hive is set in motion. More than all this, the surplus warmth and energy from this more nearly perfect form or cluster flows up into the super above, and an impulse is given that sends the busy workers out into the field, and the hum of contentment and industry is heard from every side, the occupant of the hive being a better judge than we when our opinion is formed from a standpoint of theory. I am pleading for the depth of the regular Langstroth hive in which to place our new swarms. We may contract, if we choose, down to five or six frames, according to the size of the swarms and the prospective honey harvest.

So the thought comes to me, "Can we afford to place our prime swarms in a shallow hive, shut down in many cases with a queen-excluder, compelling them to begin housekeeping in such a cramped-up place that they must show their resentment by swarming out again and again, and perhaps dwindling until they are almost worthless, and that, too, in the midst of a white-clover yield of honey?" This has been my experience with shallow hives. I hope others have been more successful. If so, I should be glad to know it. I for one want the regular Dovetailed hive with full sheets of foundation; for with that management I am sure to get a crop of honey if it is in the field to gather.

Hillsdale, Mich.

[Your experience hardly proves much. There are thousands of sectional brood-chamber hives in use; and I do not remember seeing a report similar to yours before. There were some other outside conditions that would account for your experience.

The mere difference in the depth of brood-chamber (only 2 inches in this case) could not account for the phenomena you describe. If you were to repeat the experiment it is very likely you would get just the opposite in results.—ED.]

THE HOFFMAN FRAME CONDEMNED FOR EXTRACTING.

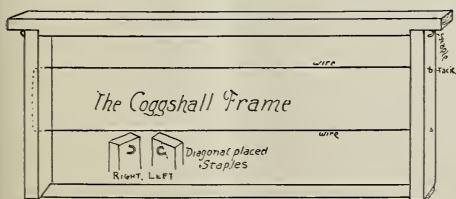
Too Much Trouble from the Ears or Projections Breaking Off.

BY W. L. COGGSHALL.

After reading what Mr. Alpine McGregor and Dr. C. C. Miller and the Editor say on page 243, March 15th GLEANINGS, I was prompted to say a word.

The Hoffman frame has its advantages in moving bees—they are always fast, and always fast when you want them loose, and they are a weak frame for extracting. I have one apiary with Hoffman frames; and every time we empty the honey, 10 to 15 of the top-bars are broken off; one end of the top-bar is split three or four inches, and the support is gone. You cut the ears off, and that weakens the frame very much; so they will soon give out.

Dr. Miller says he can handle spaced frames faster than those that are not spaced, and that for rapid work a spaced frame is better. I beg to differ with the doctor. When a man tries to loosen up a Hoffman frame where the bees have been in two years, and pry off the top-bar, which I have done repeatedly, and then not get out the frame—well, I won't say.



For the good of the order I will describe the "Coggschall" frame—one that you can drop 3 or 4 inches, full of honey, and the top-bar will not break off. Top-bar is 1 in. $\times \frac{5}{8}$ ($1\frac{1}{8} \times \frac{5}{8}$ is still better to prevent burr-combs); end, $\frac{7}{8} \times \frac{1}{2}$ inch; bottom, $\frac{3}{4} \times \frac{1}{4}$. Rabnet the top-bar out as shown. Nail with six-penny nails in the top-bar; three-p. in the bottom-bar; put a wire staple in each lower end, and let it stick out $\frac{1}{4}$ inch. You can shake bees without killing them. It is not necessary to have a $\frac{7}{8}$ -inch top-bar. The width is what prevents burr-combs in New York.

WIRING FRAMES.

Take a thin board three or four inches longer than twice the length of the wire for wiring the frame. Put a mitten or glove on the right hand after fixing the spool of wire,

so it will run off the wire. Then wind on the board 160 or more times around lengthwise. Tie with string or wire around the shears or knife and cut the wires at one end. Hang in a handy place, and pull one wire out and put it in the frame. I put only two strands across the frame, putting a tack in the end-bar, and winding the wire around, and driving down the tack, cutting off the surplus wire, if any.

West Groton, N. Y.

[As you are operating, friend Coggschall, it is possible that the Hoffman frame is not as well adapted to your needs as some other; but did I not see you work on the "lightning" order—that is, didn't I see you kick the supers off the hives and rip the frames out? Then you extract with the frames just as they hang in the hive. In your rapid way of working, the frames are picked up and often dropped into the comb-pockets, with the result that the force of the dropping comes on the ears of the frames. I do not mean to say that your method is not the proper one; but I have been in dozens of extracting-yards where no trouble at all arose from the breaking of the projections or ears. Then the frames should not be pried at the ears. They are strong enough for all ordinary support, but of course they will not stand prying. In the great majority of localities I have been in, there is no trouble in separating Hoffman frames. Hooper Bros. of Jamaica extract hundreds of thousands of pounds of honey from Hoffman frames, and they will have no other. We have tried to introduce the metal-spaced frames, but our customers insist that they want the Hoffman instead.—ED.]

A PEEP INTO MY BEE-HOUSE.

A Home-made Affair.

BY SWARTHMORE.

The building is about 5×8 feet, ground floor, and ten feet to the tip of the roof. It has a wide window at one end and a broad door at the other. The door is provided with glass but does not open, for of all the nuisances about a bee-house an opening in the door is the very worst imaginable to me. Both windows are provided with balance-shades, such as are used in my home. These shades are green; and, when drawn, the operating-room is as dark as a pocket. I make a distinction between "honey-house" and "operating-room." A honey-house is totally unfit for an operating-room, because of the everlasting lumber and clutter, to say nothing about the sticky mess from the extractor, combs about, and the danger of admitting bothersome robbers on all occasions. I want my operating-room clean and clear, free of honey, combs, bees, and mess. But I digress. In my window is a tilting pane which can be quickly thrown open to rid the house of bees after

an operation. This window attracts every bee because it is the only light spot in the house at the time; and when I have finished my work I can turn the rascals outside in a twinkling. They like it, and so do I.

The floor of my operating-room is carpeted with linoleum, the walls and ceiling are papered in buff, with a wainscoting of bright red. There is a rug or two to stand upon. I even have neat Swiss drapery at the window, for adjusting the strength of the light more than any thing else; but it makes an attractive appearance as well. There are some photographs of apiarian subjects on the walls, and some decorative useful articles about. At certain seasons I have a growing plant or two, because I like them always near me. The lighting arrangement at the present time (I frequently shift cells at night) is an oil-lamp, but I expect to pipe for gas. The heating stove

ing the breeding-queens; and at the entrance to the house is a glass hive to show the quality of the queens and bees reared within. All the woodwork inside the house is stained walnut, in dull finish, and the hives are painted pure white, making a very pleasing contrast, and, taken as a whole, is pronounced "an artistic scheme."

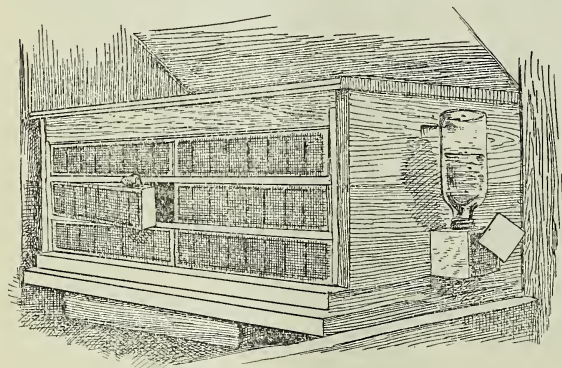
The outside of the house is painted dark olive, with white trimmings. I have a wide awning on the two sunny sides. A vine is fast covering the front and rear. In summer I have palms under the awning and a bench or two for visitors to rest upon. When the sun gets around I can lower a flap for a screen—"it is all so comfortable, so pretty!"

Now for the convenience of the thing: When I wish to start cells I go early to the hives, before the sun is high, and take up my bees. They are carried directly to the

operating-room and placed upon the low bench I have mentioned. It is so cool and comfortable inside that the bees do not thrash as they would outside in the sun and broad daylight. When it has come time to give them the larvæ I go inside, open the breeding-hive, draw what eggs are needed, and place them directly with the bees set ready to receive them. All is close at hand; I do not have to stir from my tracks. Rain or shine, cold or blow, cell-starting proceeds, for I am under cover, and so are my bees. Furthermore, temperature inside can be regulated to suit the operation. In early spring I have a summer heat within my house,

though it be but 40 outside. Thus I can make an early start.

When the cells are fairly under way I simply draw them and place them with the nursing colonies under the bench—no opening of hives. Simply raise the covers and peg them in—that is all. The queenless bees are then divided into small nuclei for mating the young queens, by this time hatching in large numbers, as explained in GLEANINGS, Jan. 1. I simply reach up to the shelves and take down the forming-screens, admit light to the room, and out will pour the bees into the screens. None are lost, for none can escape the confinement. The arrangement is quite as pretty as the house in which the deed is done. Along the lower shelf are arranged the mating-boxes; and as the screens are filled they are immediately attached to the boxes; and when all are supplied with their quota of bees I reach down under the bench and draw nurseries filled with virgin queens, and introduce one to each box. All this work is done under cover; mind you, and without moving from my tracks. If I were a lazy man I would seat myself upon a stool and be done with it.



"I REACH DOWN UNDER THE BENCH AND DRAW NURSERIES FILLED WITH VIRGIN QUEENS."

is oil too, but of course that will be gas when the change is made. Water I catch from the roof, and always have a generous supply.

Across the window end of the house is the work-bench, and along the wall at the right hand are several shelves for holding the numerous articles used in queen-rearing. My tools are all at hand without moving from the bench. Along the side, directly beneath the shelves, is a long, low, removable bench for holding the cell-starting chambers. Beneath this bench is a slatted ventilator which can be opened and closed at will, and which does not admit light; and above this, on the opposite side, is a wide screen-covered opening into the extracting-room, densely shaded, which can also be opened and closed at will. Thus I can regulate my room to perfect darkness, and at the same time supply ample ventilation.

Under the benches are several booming colonies which are used exclusively for cell-construction, and there is also nursery capacity within these hives for over 200 virgin queens. Upon the workbench, close to my right arm, are the miniature hives contain-

BEE-KEEPING IN JAMAICA.

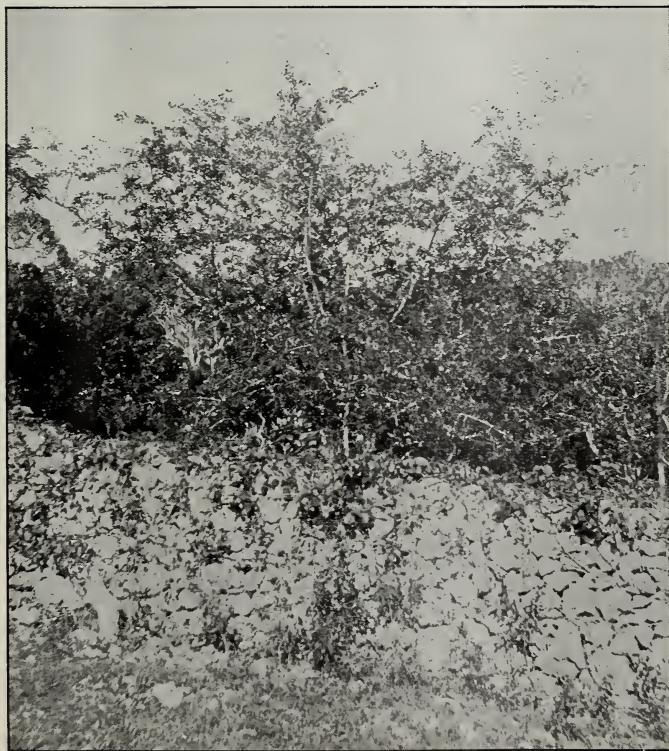
The Home of Logwood.

BY LESLIE ALEXANDER.

Mr. Root:—As you have recently been turning your attention to things West Indian, notably Cuban bee-keeping, I have no doubt that a few notes on bee-keeping in Jamaica, with a few typical illustrations, may interest the vast army of brother bee-keepers in the States. I am by no means a professional—only a humble amateur running an apiary of 120 colonies. My apiary is situated at Malvern, a very large pimento property, in the wonderful health-giving Santa Cruz

temperature is 78°, and our average minimum 73.

A little over two years ago I started bee-keeping as an experiment with six colonies of Italian bees. In a short time I grew to love the work; and when, at the end of the first twelve months, I found I had extracted 1680 lbs. from barely 15 strong colonies, I was not only proud, but I resolved to stick to the business. From 45 strong colonies this year (by strong I mean the full force of 70,000 bees and upward, according to Doolittle's average) I have taken off 4900 lbs. I run the apiary unassisted, save temporary aid at extracting-time; and what with the outdoor work, and the bracing climate, I



LOGWOOD-TREE IN FULL BLOOM.

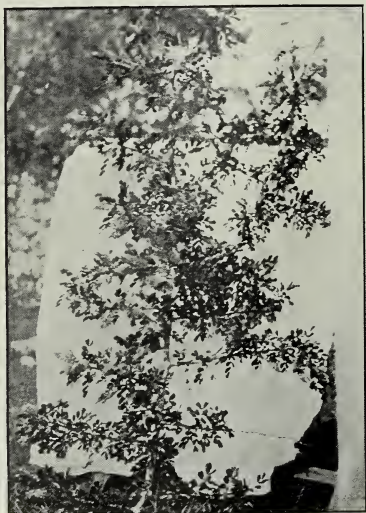
Mountains, at an elevation of 2300 feet. It is only a small nook in the logwood region, the honey-plant par excellence of the tropics.

Having been stricken down several years ago with pulmonary complaint I had to abandon work on the plains, and, upon the advice of my physicians, I came here—the climate being considered one of the best in the world for all pulmonary troubles, owing to the total absence of humidity, due to the fact that the entire mountain-range runs parallel to the sea. Our average maximum

have hardly known an ache these three years past. This speaks volumes for the climate and the occupation.

September brings with it a brief logwood bloom, which is the forerunner of the main honey-flow, never later than the middle of November in this locality. The September flow, following so closely upon the perishing or dwindling season, July and August, gives the bees a wonderful stimulus—not enough to put on supers, yet sufficient to crowd the brood-chambers when the colonies cast fine swarms—I should say an

average of about 20 per cent. I find that the September swarms are the first colonies to be supered when the main honey-flow is on. I ply all weak colonies now with comb foundation, or empty combs if any are on hand. After the real rainy seasons in October are over, should I still find myself with any weak colonies (not having time to build



BRANCH OF LOGWOOD-TREE, SHOWING BLOSSOMS.

up) I begin to unite. This puts every thing in shape for the grand burst of logwood bloom in November. And what grander sight than miles upon miles of gold? It is logwood, logwood everywhere!

Now, the real flow along the plains and low-lying country does not begin until the middle of December, lasting sometimes until the end of January. If we have a few showers in February or early in March, every thing is gold again, followed closely, often simultaneously, by a heavy mango bloom lasting about five weeks. April may, generally speaking, be considered our actual swarming season. In this month the giant May-pole or corotoe, pimento, and coffee are in bloom; and what with the nectar from the ever-present Spanish needle, if the bees are idle, if queens are not prolific, and if your colonies are not literally bubbling over with bees, it is no fault of nature. I am speaking strictly for my locality, as I know the conditions are somewhat different in other places. In some of the low-lying districts, where logwood is the only honey-plant, stimulating has to be practiced to a much greater extent than in the mountains, where the variety is greater.

I use nothing but the standard ten-frame hives, all locally made. I make the bodies and bottoms of empty kerosene-oil boxes, the covers of empty packing-cases. This style

of hive is extensively used by bee-keepers in Jamaica. Five empty beer-bottles sunk into the ground, neck downward, and made level, make an excellent stand, and can bear five supers of honey, about 300 lbs. weight. I keep 12 three frame nuclei to every 50 colonies, in which I rear queens to meet the demands of my apiary. I use no scientific methods in this department. A square inch of comb with some three-day-old larvæ, grafted or slipped between the combs, does the job. I have breeding queens from The A. I. Root Co. and G. M. Doolittle. The Root Co.'s queens, from their leather-colored strain of Italians, are all round fine, the bees from which know how to roll in the honey; and in times of great scarcity all colonies with their progeny keep healthy and strong. I strengthen my weak colonies by swapping their positions with strong ones. Nuclei are also formed in this way, giving each one in advance a frame of larvæ. This plan helps to discourage swarming in strong colonies. The system of "swapping" hives is an admirable one in the case of laying workers. After removal you have only to give the colony with the laying worker a frame of larvæ, and the new force of bees soon starts queen-cells.

I have already told you how I take swarms—see GLEANINGS, Jan. 15, 1902. When not desiring increase, two or three swarms are huddled into the same hive. I never could see the advantage of clipping my queens, and so leave it severely alone. When I rise to the rank of being owner of 500 colonies, and have an assistant (must be a specialist at lifting heavy weights) I shall consider the matter.

I have a rather novel plan in dealing with robbing. The entire colony being robbed is banked with hay which is freely sprinkled with a brush dipped in whitewash containing about a tablespoonful of turpentine. Every robber is branded "white," and I can then detect the colony from which the robbers are issuing, when the entrance is forthwith closed. No matter how thickly the hay is placed around a colony, the bees get ample ventilation, and at night the covering may be removed. The whitewashing is, of course, superior to dusting with flour; and since it saturates the hay, the bees get disgusted as soon as their bodies get foul and sticky, the smell of the turpentine adding to their disgust.

There being no local market for it, very little comb honey is produced in Jamaica—all run for extracted. A good many bee-keepers preserve one season's empty combs for supering colonies the next honey-flow. Now, I husband them for my swarms, and since the swarming season follows so closely on the honey season, the combs have no time to generate moth-worms, which abound here. Honey (I am speaking of logwood) stored in new combs is bound to be white; hence I am careful not to give dark combs in supers when the bloom is on. Too much care can not be exercised in this respect, as honey is so easily discolored or darkened.

From the extractor I run the honey into two large vats. There it is allowed to subside thoroughly for three days, during which time it undergoes three skimmings. It is then thrown into the extractor, and to the honey-gate is attached a large muslin bag. After undergoing slow straining it is gradually filling the cask below through a

cally. The use of the infamous pork-barrel, and carelessness in extracting, grading, etc., were also responsible for this sad state of affairs. A well-organized bee-keepers' association has now been started. It is only three months old, but is already doing excellent work. It has a traveling salesman in England, and the very first



PART OF APIARY WITH MR. ALEXANDER AT WORK.

funnel, when it is perfectly free of all impurities, froth, etc. I have found that the average yield here per colony is 119 lbs. I have had colonies yield 210 lbs., but exceptions do not prove the rule. I manufacture a first-class quality of vinegar from all washings, adopting the method laid down by Mrs. A. J. Barber, in GLEANINGS for October, 1900, page 763.

shipment under the new *regime* realized 28s. per cwt. Of course, all our honey is now carefully graded and branded by the association, which is a guarantee of its purity. We hope to realize once more the old price, 32s. per cwt., if not more. Already 16,000 gallons of honey and a ton of wax have been shipped through the association. We have two able and energetic men at the head of



A 20-FRAME EXPERIMENTAL BROOD-CHAMBER, WITH DOUBLE SUPERS ON.

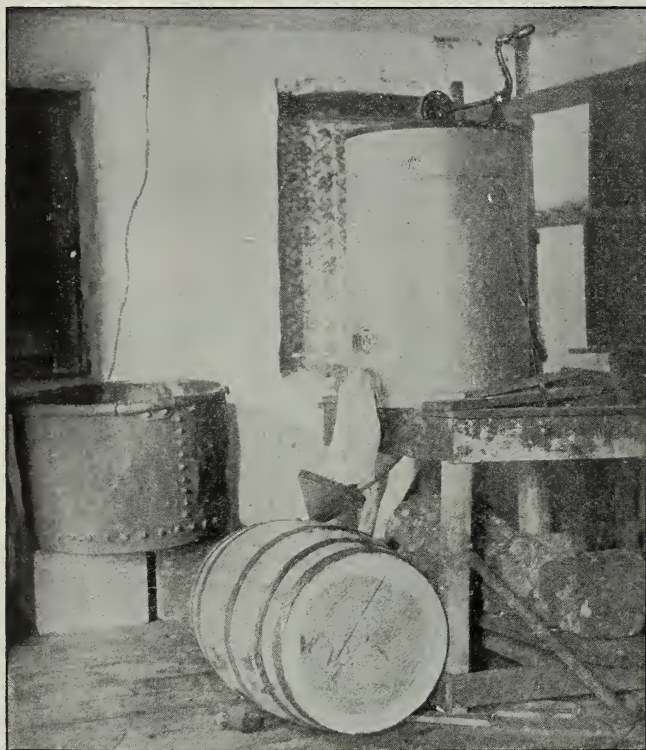
Two years ago Jamaica honey sold in the English market at 32s. per cwt., and 2s. 1d. per gallon locally. Through the indifference of the middleman, or dealer, it went down six months ago to the wretched figure of 12s. per cwt. abroad, and 6s. per cwt. lo-

cal affairs, Mr. H. C. Burnet, the General Manager, and Mr. C. W. McHardy, the Secretary, whose postal address is 145 Harbour St., Kingston. The enterprising Elder-Dempster Steamship Co. generously gave our traveling salesman a free trip to

England, and they carry all our honey at present at 50 per cent reduced rates. Jamaica logwood honey stands on an equal with the best honeys of the world, notably the clover honeys of America; and with careful handling, such as it now obtains through the medium of the Bee-keepers' Association, it is bound to take its place in the first markets of the world. It is a thousand pities that the prohibitive export duty of 1s. per gallon to America forces us to send nearly all the honey produced in the colony to Europe; for, though the output of the States is so great, there would always be a market for it, since our honey season is at its height when the bees in your own coun-

cwt. of honey annually is not accounted for. Taking this into consideration, then the basis of calculation would be as follows:

Jamaica, with an area of 4200 square miles, and an output of 16,000 cwt. (1,792,000 lbs.) annually, would show a yield of 423 lbs. per square mile in round numbers. This is away ahead of Texas, California, and Cuba. When it is considered that ours is a land of eternal sunshine, and well defined seasons; that this is the home of the logwood, one of the finest honey-producing-plants of the world; that here such a thing as foul brood, black brood, or any other bee-disease, is unknown, and, lastly, that here we have the largest yield of honey per



CORNER OF EXTRACTING-ROOM, SHOWING ONE OF THE HONEY-VATS.

try are in winter quarters. It is obvious that there would be a demand if the honey were placed in your market about the month of April.

In conclusion I would point out that the basis of calculation of your secretary, Mr. A. L. Boyden (see GLEANINGS for May, 1902, page 368), viz., the export returns, is hardly a fair one by which to arrive at the yield per square mile—more so when placed alongside of a "Census Report" in the case of Texas. There is the question of local consumption to be considered. From my knowledge I am led to say that at least 3000

square mile, the term "bee-keeper's paradise" might truly be the designation of our island, Jamaica, land of wood and streams. Malvern, Jamaica.

[Mr. Geo. W. Phillips, our head apiarist, formerly of Jamaica, and one who has large bee-keeping interests there now, comments as follows:]

Little did I think, when on board the train bound for Kingston to attend the bee-keepers' meeting which resulted in the formation of the Jamaica Bee-keepers' Association, and met Mr. Alexander, the writer

of the above article, that I should ever have the pleasure of supplementing an article of his for GLEANINGS, as I do now, from the Home of the Honey-bees; but it is the unexpected that generally happens.

We passed through a sort of fairyland on that journey. Logwood was in full bloom; and as the train rushed along its serpentine course among the mountains, the hills, valleys, and plains appeared one undulating sea of yellow blossoms.

There were quite a number of bee-keepers on board; and somewhere about the station called Four-Paths we were joined by Mr. Hooper, the distinguished apiarist of the island. He told us he was having a splendid flow just then, and he and his boys were busy extracting. As we passed the railroad stations near which his apiaries were located we could see by the full barrels and comb-honey supers stacked up for shipment that his statement was true. The sight of those full barrels gave us fellows a sort of inspiration.

Mr. Alexander speaks of the perishing or dwindling season. Let me explain what this is. In most localities in Jamaica there is no honey coming in from the fields between August and October. During this period judicious stimulating should be practiced. Mr. Alexander has given it a comparatively refined name; the real Jamaican name is "hard times." These "hard times" follow immediately upon the swarming season, April to June. Where no effort is made to prevent after-swarms, the parent colony is left impoverished, while the late swarms have no time to build up before the "hard times" overtakes them. Can we wonder, then, that, where no feeding is done, the bee-keeper as well as bees experience dwindling times, perishing times, *hard times*? It is the careless bee-keeper all over the world who allows this condition of affairs to exist, that generally condemns bee-keeping as a failure, and quits the business with "blasted hopes."

Under normal conditions, September swarms are of comparatively rare occurrence. Of course, even in a small island like Jamaica locality makes some difference.

Most bee-keepers in Jamaica, when starting in the business, make the mistake of adopting kerosene-box hives; and Mr. Alexander is no exception to the rule. A kerosene-box, let me say, is almost identical with that which contains two five-gallon honey-tins. The sides are only $\frac{3}{8}$ in. thick, thus offering scanty protection from the rays of the sun. Besides, being ridiculously frail, they are liable to collapse, under a weight of honey, at any time. There is not one progressive bee-keeper that I know who has not discarded them for something more substantial.

Mr. Alexander is a pleasant gentleman, and an enthusiastic bee-keeper. He is a fellow who knows how to defend his own views too, and I shall not forget the spirited discussion we had on our way to Kingston

that day, and the manner in which he defended his kerosene-box hive and simple method of queen-rearing.

There are many interesting items in the above article which I can not now comment upon. However, let me say that, in order to secure large crops of honey in Jamaica, a bee-keeper must have his colonies bubbling over with bees in October. They will then be able to store the necessary amount in the brood-nest from bellflower or Christmas pop, and make a start in the super besides, so that, when the logwood bursts into bloom, the latter part of December, all hands will be ready for work, and the bee-keeper will have the pleasant task of piling on the supers.

If the readers of GLEANINGS desire it, I will say something more in a later issue about bee-keeping in Jamaica.

GEO. W. PHILLIPS.

COMB-HONEY PRODUCTION.

How to Get all the Sections No. 1 and Fancy. Part 3.

BY OREL L. HERSHISER.

The colony, having been built up to great strength, and prepared for the harvest according to one of the foregoing methods, is now, at the opening of the honey-flow, ready for the first super. It is not advised to give the super to the colony before honey is being gathered in sufficient quantity to insure continuous work in the drawing-out and building of the combs. The more rapidly the combs are built and finished, the better will be the appearance of the product. Usually the proper time to put on the super is when the upper edges of the top-bars of the brood-frames begin to have a white and fresh appearance, indicating that the bees are gathering honey and secreting wax.

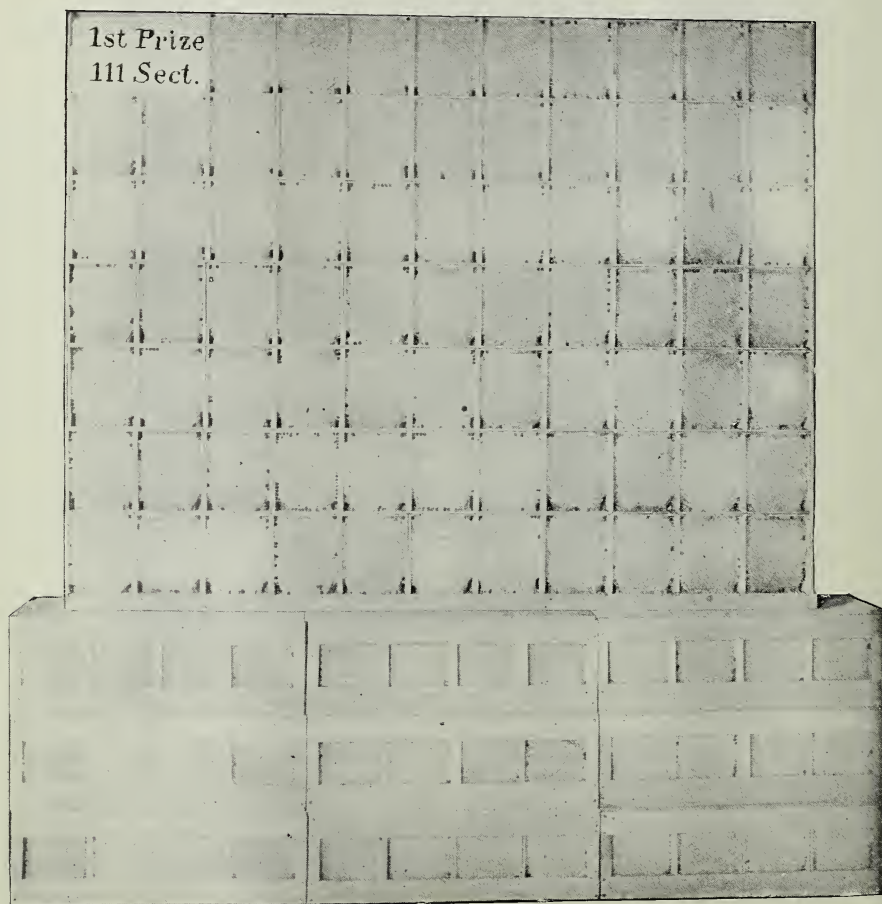
For fancy comb-honey production, only the very best white sections should be used. These should be provided with full sheets of the best extra thin comb foundation, care being taken that it is securely attached lengthwise of the middle of the top of the section so it will not drop down when subjected to the heat of the hive and weight of the bees which will cluster upon it. To insure further the true building of the combs, the hive should be placed perfectly level, especially in the horizontal direction that is at right angles with the sides of the combs in the sections.

The best results will be obtained if the first super contains a few fully drawn sections of comb, of which the comb-honey producer usually has a supply saved over from the previous season. The super thus prepared is given to the colony. The upper section of the brood-chamber having been removed, and the super substituted in its place, the space formerly occupied by the colony, while being bred up for the honey harvest, has been diminished, and the bees

will at once commence work in the sections. If the flowers are secreting nectar in abundance it will be but a few days till capping of the combs in the super commences, which will indicate the time when a second super should be placed *above* the first. Capping will now progress in the first super. At the same time, the honey-laden bees returning from the fields, not all being able to dispose of their burdens in the first super, which is rapidly approaching completion, will commence storing in the second, and continue without interruption. The opportunities for work in the first super are rapidly diminishing, and day by day fewer bees can be employed there, till finally the super is finished, and its completion will have been accomplished under the most favorable circumstances for thorough and complete work. But there is no enforced idleness, for the upper super furnishes store room for all the nectar that

can not be stored in the first one. In due time capping will commence in the upper or second super, if the honey-flow continues, which indicates the time when the capping in the first is finished. The first super may now be removed from the hive; and the second one, which is now being capped, substituted in its place, and a third super placed *above* it. When capping has commenced in the third super, the second, or one next to the brood-body, will be finished, and may be removed; the third, or one over the second, substituted in place of the latter, and a fourth placed above the third; and so on to the end of the season.

The natural instinct of the bee is to store its food as near as possible to the brood. The apiarist should heed the teaching of nature, and keep food and brood in as compact a space as possible, and not violate the rule so unerringly pointed out by the Creator, by lifting the partly filled super and



THE PRODUCT OF ONE HIVE OF BLACK BEES AT THE PAN-AMERICAN IN A DANZENBAKER HIVE, MANIPULATED ACCORDING TO THE PLAN HERE DESCRIBED.

placing beneath it one containing empty sections, according to orthodox teaching. By practicing the orthodox method, much of the working force will be withdrawn from the upper super, and work will be distributed through that and the lower one in undesirable and unprofitable proportion, oft-times resulting in none of the sections being properly filled.

The system of management we have attempted to outline, and which we have found to produce profitable results, requires that there be no separating of the working and storing force of bees from the brood more than is necessary by the outward and upward extension of work in the supers; that there be not more than two supers in use on the hive at any one time; that the supers be removed as fast as completed; that there be no enforced idleness by leaving the super on till finished before giving additional storage room; and, as far as possible, to have the bees complete each super while it is next to the brood-chamber to insure perfect work. By keeping the colony compact its heat is conserved, which promotes brood-rearing, keeps the hive well stocked with bees, resulting in rapid, perfect, and uniform building of combs in the super. The bees will complete each super separately, using only the upper one as opportunity for work in the lower diminishes and finally ceases.

As the end of the season draws near, the bees will finish the last super, next to the brood-chamber, with honey from the unfinished combs in the last upper super. The apiarist will thus approach the end of the season with practically all the unfinished sections in the last upper super, and all other sections, filled and finished fancy.

General adoption of improved methods of comb-honey production would exert a far-reaching influence on apiculture. There would result increased consumption, followed by better demand, and satisfactory prices for honey in the comb. It can not be denied that beautiful appearance is the most potent factor in marketing. To please the eye will accomplish more, in a pecuniary way, than to please the sense of taste. The Ben Davis apple obtained its almost universal popularity with horticulturists, who grow apples for market, because of its appearance—a beautiful red, the most desirable color for apples—and not on account of its quality, which is actually inferior. While honey is just as good in sections which have an unoccupied space between the comb and the wood, decidedly the best demand is for those which are filled and capped as nearly solid as it is possible to produce them.

The fancy and attractive appearance increases the value of comb honey, and adds dollars to the net profits of the apiarist without decreasing the quantity which the bees will make; but, rather, would there result an increased production. There would also result a decrease of the relative proportion of extracted honey as compared

with that in the comb which bee-keepers would produce because of the better price and demand for the latter. This would tend to improve the demand and price of honey in the extracted form. It is to the financial advantage of the apiarist, from every view-point, to make a special effort to produce fancy comb honey.

[The illustration herewith shows the exhibit that many admired at the Pan-American. It was produced by Mr. Hershiser, on the grounds of the exposition, in the Agricultural Building, where many of the bees would be lost, on the very plan he outlines in these three articles, especially in the one we have before us. This honey, 102 lbs. all told, came from one colony of black bees in a Danzenbaker hive. When it is remembered that the locality around the Pan-American was not of the best, because the lawns were kept mown closely every day, the results were all the more surprising.]

It is not claimed by Mr. Hershiser that the *hive* is responsible for this good result, because any hive could be manipulated to a great extent on this principle. But the Danzenbaker or any sectional brood-chamber is especially adapted to the treatment.

The particular feature of the plan is that, instead of getting a large per cent of sections No. 1 and 2, almost the entire product of the hive is *No. 1* and "*Fancy*." As will be seen by the illustration, a very large part if not the entire lot of honey would grade as "*Fancy*." Under a different (or the usual) plan of manipulation, putting an empty super *under* a filled super, there might have been more boxes of honey; but there would not have begun to be as many that would grade as No. 1 and "*Fancy*."

Years ago there used to be a good many articles telling what to do with unfinished sections. Some recommended extracting; others, cutting out and selling for chunk honey; others, putting it back on the hives and feeding it back. It will be remembered that, when these articles were being published, it was during the *very time* that the plan of putting an empty super *under* partly finished ones was being exploited and recommended. In other words, if I understand Mr. Hershiser, *tying up* results in too many unfinished sections, while *tying under* increases the No. 1 and "*Fancy*." Mr. Hershiser's articles will bear careful reading, and the proof of the pudding is right before you.—Ed.]

VENTILATION OF BEE-CELLARS VIEWED FROM A SCIENTIFIC STANDPOINT.

Contrary Experiences Possibly Harmonized.

BY ARTHUR C. MILLER.

In a recent number of GLEANINGS you commented on the different practices in regard to the ventilation of bee-cellars, and were at a loss to account for bees wintering

well under seemingly contrary conditions. At the outset I must confess that I can not shed much light on the problem; still, I may be able to give you a clue to a solution.

First, we have not yet had a full and *exact* statement of the conditions of Mr. Barber's and Mr. Doolittle's cellars. From such descriptions as I have read I should say that each afforded a greater or less amount of slow but sure change of air. If you will consider the great difference in temperature between the inside and outside air, the porosity of the walls, roof, and earth surrounding them, you will, I think, see the necessity of taking them into account in attempting to find a solution. Moisture of the surrounding soil is also a factor of some moment, also the chemical composition of the soil, as well as its nature—whether sandy, gravelly, clayey, etc.

If the soil surrounding the cellar or the cellar itself contains much decaying (even if slowly so) vegetable matter, the necessity for ventilation is increased; for such matter tends to give out carbonic-acid gas. But if the ground is very moist, even if drains prevent the water accumulating in the cellar, such moisture absorbs some of the carbonic gas produced by the bees' respiration, and limey soils, under some circumstances, absorb carbonic gas so as to produce a so-called bicarbonate of lime.

Among other factors are the number of colonies to cubic feet of cellar, size of such colonies, and temperature of cellar. The colder the cellar the more honey the bees must oxidize in order to live, and the consequently greater production of noxious gas; also inferior stores or other disturbing conditions will have weight in that they cause increased activity, which results in using more oxygen.

You are up against the real thing in trying to solve that problem, and you will have to get down to science to do so. The old ways won't work. It won't do to accept the statement, "My cellar is dry." You must know how dry it is. It won't do to accept the statement that "three doors keep out all fresh air," or that the "air is never changed in my cellar all winter." You have got to *know*. You must also know the *degree* of purity of the contained air.

Mr. Cheshire's work contains, in the chapter on Wintering (Vol. 2), a very good essay on the need, value, and use of oxygen by the bees. It applies particularly to bees wintered in the open; but if you will allow for the difference in the cellar temperature you can form some idea of the amount of air needed in the cellar.

MOORE DO NOT have to winter my bees in a cellar, though doubtless it would save honey, though at a cost in other ways, but I should like to see the *why* of the ventilation of cellars settled. Get the exact and complete facts, and the problem will cease to be.

Providence, R. I.

NOT ONLY DO I have to winter my bees in a cellar, but I would gather from what you say that you are of the opinion that there is more

actual ventilation in those bee-cellars where there is supposed to be practically none than the owners of those cellars imagine. This is possibly true; but a very important point to be considered is uniform temperature. I think we may set it down as a fact not to be disputed by any one, that in an absolutely uniform temperature of the right degree, bees require less ventilation than where there is a variation. A warm temperature especially seems to require a change of air.—ED.]



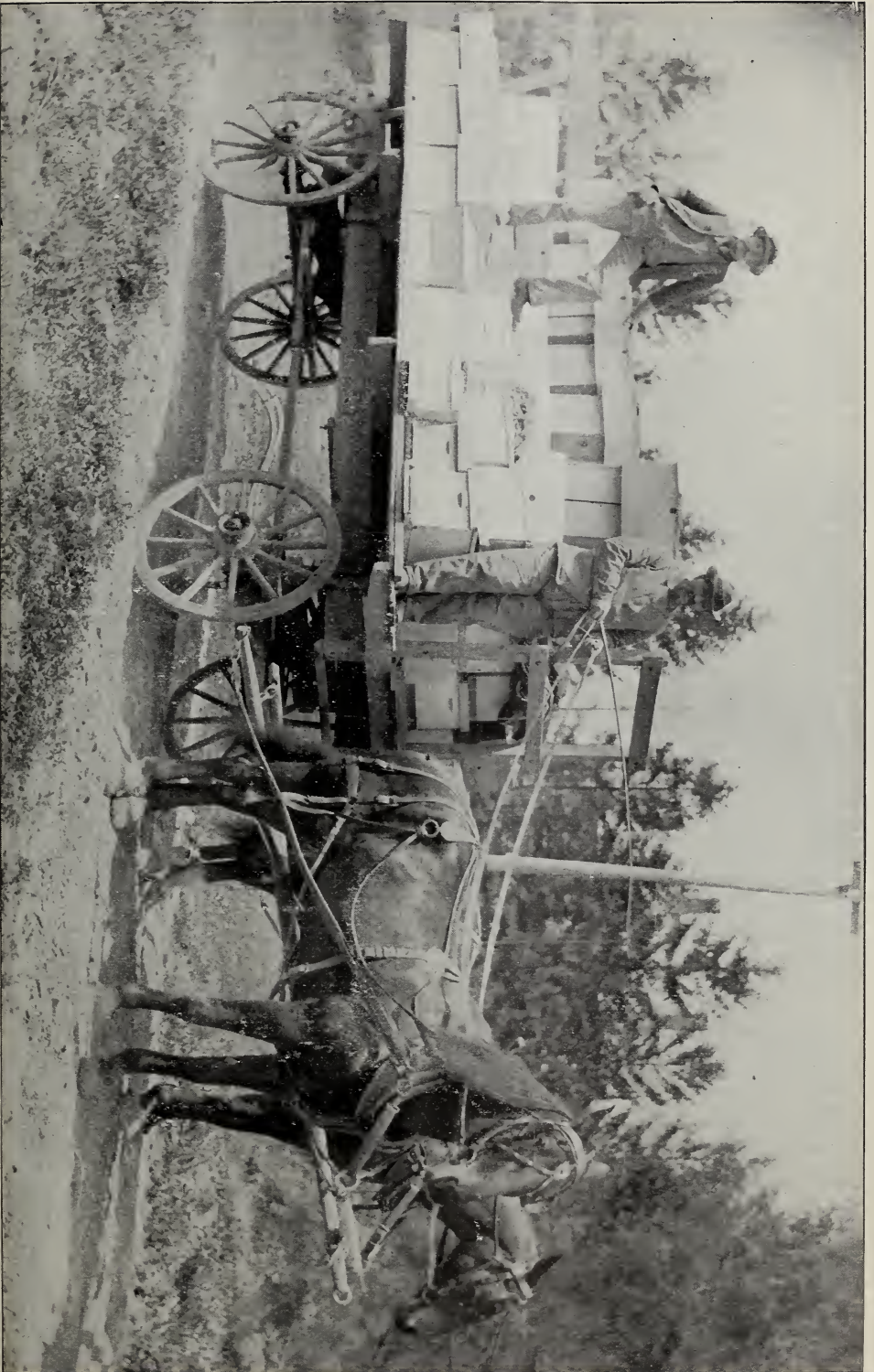
MOVING BEES A SHORT DISTANCE; SOME OF THE DIFFICULTIES INVOLVED.

To move bees a short distance in the summer, and do it rightly, causing no confusion, is quite a trick after all. Did you move those bees from the south to the north side of that tree at once, or did you move them the length of the hive at a time, once a day? Bees can be moved ahead or backward better than sidewise, especially if they are in close-sitting groups. Move them endwise the length of the hive at a time, and they will hardly notice it; but move them sidewise, even as little as the width of the hive, and a great confusion will be the result. As I said before, it is mainly by being accustomed to location that they find their home. By moving endwise, location is not changed (for practical purposes); only the distance is varied a little, one way or the other, as the case may be; but move them sidewise, and every colony except one end one has taken the place of another. Although their relative position (appearance) may be retained, their location is completely changed, giving them an extra good chance for a general mix-up.

Your compositor has made another mistake. My manuscript says, "in groups of five ten feet apart," meaning, of course, in groups of five colonies *each*, ten feet apart. The insertion of the little word *or* between five and ten changes the meaning of the sentence, and makes it illogical. In groups of five colonies *five* feet apart, there is a difference and economy in room and steps, but not when ten feet apart. G. C. GREINER.

La Salle, N. Y.

[That row of hives was moved about three times their length directly backward, i. e., northward. They had been stationed, by mistake of one of our men, as I explained, on the *south* side of the trees. When I arrived at the yard and saw what had been done I was disgusted, and decided I would move the whole row of hives backward, even



THE ROOT CO.'S MEN READY TO MOVE BEES TO ONE OF THE OUTYARDS. SEE EDITORIALS.

if the bees had located their entrances. So I moved each hive back so that they stood about a foot back of the *north* line of the trees. This was done at one operation, keeping the same relative position of the hives. The only difference was that, to the bees at least, the trees appeared to have moved southward. There was very little if any mixing, but there was an interruption, for it took the bees nearly all day to become accustomed to the change. Just before the moving they were working in the field; but honey-gathering ceased as soon as the workers returned. But conditions were normal, or practically so, the next day.

You are entirely correct when you say bees can be moved *backward* more readily than sidewise. I would not hesitate to move a whole apiary three or four feet backward; and it would make no difference if it were moved sidewise providing there were no distinguishing landmarks such as trees. If, for instance, the apiary were located in an open plain or field, without any trees or knolls, nor any thing to distinguish location, the whole bee-yard, if the relative position of each hive were preserved, could be moved a good many feet one way or the other.

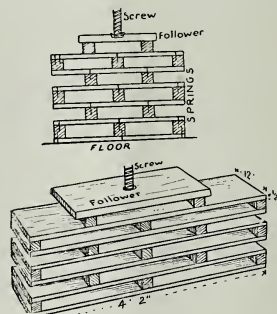
In the little unconventional convention, made up of Mr. Chalon Fowls, Mr. W. Z. Hutchinson, and myself, at the home of Mr. Fowls, a discussion arose as to whether a shaken swarm could be shifted around as readily as a natural swarm. Mr. Hutchinson, as I reported, was of the opinion that it could be. We should like to have reports from those who have tested the matter. It sometimes becomes very desirable to move a bee-yard from the front of the house to the rear, because of the annoyance to the passersby in a public highway. If the shaken plan would work, the whole yard could be moved backward the depth of the lot, or nearly so. If any one tries the experiment, perhaps he had better put two or three weak nuclei in front to catch the few stragglers that may come back. These, later, can be again moved back.—ED.]

SUGGESTION NO. 1 FOR IMPROVEMENT IN WAX-PRESSES.

On page 675, Aug. 15, last year, mention is made of the fact that a continuous pressure under the screw of the wax-press was desirable; but that an ordinary spring, sufficiently stiff, would be too expensive. Let me suggest a wood spring for your wax-press, that is both powerful and cheap. As I do not know the size of the press I shall have to assume dimensions; so we will make our spring 4 feet 2 inches long and 12 in. wide and 10 inches high or thick. We shall need for it six dry hard straight-grained boards of southern pine or other suitable wood, $\frac{1}{2} \times 12$ in. \times 4 ft. 2 in., and 18 pieces of any kind of stuff $1 \times 2 \times 12$ inches.

To begin, lay down on the floor or bench three of these blocks, exactly two feet from center to center. Now lay on one of the

boards, and it ought to just cover the blocks with one under each end, and one under the center. Tack the board down to the blocks, and lay on top of it two more blocks with their centers 2 feet apart and 13 inches from each end of the board. Tack these



blocks to the board, and lay on them the second board; on this place three blocks exactly over the three we started with; next the third board, and on it *two* blocks just over the two on the second board. Proceed in this way till the 6 boards and 18 blocks are all used up, and you will have a spring that will surprise you for strength, lightness, and low cost. These springs did good service here in war times under freight-cars. Of course, the wood will *set* after a time, but will do service a long time if it doesn't get wet while under a load. I will make a rough elevation or side view to help out my crude directions. MECHANIC.

[Your scheme of a wooden spring would be all right save for one fatal objection. It would soon lose its elasticity. Put that spring inside of a wax-press, and a screw on top of it, just as you have shown, and the enveloping steam would very soon make it good for nothing. As soon as pressure was applied the wooden boards would bend and stay bent. Why, that is just the way they bend all bent work. The wood is put into a steam-box, and when it is thoroughly soaked with hot steam it is then given the proper curve, and allowed to dry. Wagon-felloes, bicycle-rims, and all similar work, are treated in this way.—ED.]

MORE ABOUT BULK COMB HONEY; A PLEA FOR SECTIONS WEIGHING A FULL POUND.

H. H. Hyde says, page 14, that "when a consumer buys a can of bulk comb honey . . . he feels that he is getting full weight." I want to emphasize the words "full weight." That tells the most of the story. Consumers are rapidly "catching on" that our so-called "standard" sections do not hold a *full-weight* pound, and are demanding bulk honey. Who is to blame for this state of affairs? Certainly not the consumer. Eight years ago I did not have a customer who called for bulk honey. Now I have hundreds. One lady takes about 500 lbs. of it every year. I

have one customer who will not buy it in the sections at all. He will stand by and see me cut it out of the sections, place in his bucket, and pour extracted honey over it, and gladly pay for it, and take it away. He says he gets full weight (what he pays for), and that "the comb honey floating in the liquid honey is very rich and nice."

Bulk honey, managed with the same care as that of section honey, and covered with a fine grade of extracted honey, is most delicious to my taste. Had we all adopted a section large enough to hold a full pound, the demand for bulk honey would not now be increasing so rapidly. When a customer buys a package of bulk honey he tells all his neighbors what "rich" honey he has, and soon we have a dozen more customers wanting honey like that we sold to Mr. Smith. It's no use for us to form a mutual-admiration society and say we will stick to a certain size "standard" section, and force our customers to buy light weights. They just simply won't do it. With combs $1\frac{3}{8}$ thick I find it takes nearly 20 square inches of comb to weigh a full pound. The 4×5 sections contain $17\frac{3}{8}$ square inches of comb ($4\frac{3}{4}\times 3\frac{3}{4}$). The $4\frac{1}{4}\times 5$ section contains 19 square inches of comb, $4\frac{1}{4}\times 4$. I firmly believe that, if we had adopted the $4\frac{1}{4}\times 5\times 1\frac{3}{8}$ section, or one of equal capacity, the demand for bulk honey would not now be increasing so very rapidly. But the demand is increasing, and I predict that it will continue to grow.

There is one advantage in producing bulk honey that Bro. H. does not mention. When we cut out the bulk honey, place it in the cans, and cover it with extracted honey, there is no trouble with worms getting into it. We have no labor nor trouble in fumigating our honey.

Speaking of the advantages of closed-end frames, you say, Mr. Editor, in your footnote to my article, page 907: "All that you say in favor of closed-end frames is equally true of the half-closed end or Hoffman." There is one very important advantage of the closed-end frame that I did not mention. Closed-end frames confine the bees *within the frames*. This is not true of the half-closed end or Hoffman. To confine the bees within the frames is a very important advantage. No combs can then be built between the ends of the frames and inside of hive-walls.

T. K. MASSIE.

Tophet, W. Va.

FEEDING BACK THE HONEY FROM PARTLY FILLED SECTIONS; HOW IT SHOULD BE DONE.

I have on hand quite a number of sections partly filled—not marketable last fall, nor filled sufficiently for home use. Please tell me if it would pay to feed the honey in them to my bees. If so, how? Would they leave the combs unharmed? If so, could they be used again?

I have no extractor, and raise only comb honey. The bees are busy now on the maples.

I thought if the bees could use these unfinished sections in raising brood I might be able to have them fill some sections with fruit-bloom honey.

E. L. STEWART.

Chestertown, Maryland, Mar. 21.

[If you put such honey in the upper story of a hive, expecting the bees to carry the honey down into the brood-nest, you may be disappointed. They may or may not—it all depends on the season of the year. If you wish to have the sections cleaned out, put them in supers and put the supers in hives, stacked up in one tall pile a few rods from the apiary. Give ingress to the pile through only a very small entrance so that only one or two bees can pass at a time. The bees of the yard will rob out the sections very slowly, without making any special commotion. Mr. Vernon Burt, our neighbor, has all such sections of his cleaned out in this way.—Ed.]

NATIONAL COMMERCIAL ORGANIZATION.

I hope that our people will not stop thinking and talking national organization for commercial benefits. While there is not so much want for it at this particular season of the year, this fall there will be many sad experiences, and the matter will again be brought to the front. Besides the loss to the producers, some have said that it will cost too much to maintain the head office; but it is evident that such have never put the figures together. Here are a few:

We will make our basis low, so as to be safe. We will calculate on handling only 1000 cars of honey, that being extracted, which would be 15,000 tons, or 30,000,000 pounds. Figuring upon a selling basis of 6 cts. per pound, we have \$1,800,000. As the cost of selling to be upon the basis of 1 per cent, we have \$8,000, which should be ample for that amount of business; when the business doubles, then our resources also double, which will be needed for the extra help and other appliances. Now we have figured that it will cost \$18,000 to market 1000 carloads of honey through the National Commercial Agency, and we must seek for some benefit, or we are out that amount; but they are so numerous we can mention but few. First, as it now is we pay 5 per cent to market the honey. Here we save 4 per cent, or \$72,000, and surely we should be able to keep the selling price at least one cent per pound higher than under the present system; and when crops are good we should still hold the prices uniform, which would mean at least two cents per pound; but figuring upon the one-cent saving, and from the 1000 carloads handled, we save \$300,000; add to this the \$72,000, and we have \$372,000, less the \$18,000 selling expenses, and here we are with a net saving to ourselves of \$354,000; and when the business doubles we have \$708,000, and shall soon reach the million point; yes, and see what we can save of the thousands of dollars' worth of our goods which are now consigned to unscrupulous

commission men, and what is sold upon the market below its actual market value by the producers not being posted as to its true conditions.

I am sure that there is much in it for us—too much to allow to pass by and not put the machinery in motion. A million dollars each year is good money for the other fellow to make from us, and to be placed to his bank account when it is the result of our own labors, and should be retained by us. What do you say? E. R. Root seems to think the people are hardly ready for the million dollars; but it is to be hoped that they will soon reach out and take it.

Hanford, Cal.

F. E. BROWN.

[I see no defect in your general plan. The scheme is all right; but getting it into practical effect—there's the rub. I still believe that the best way to get at this problem is to make hard pulls for State organizations; then when we get several of them effectively working, start one that shall be national in character. To use a homely phrase, there is such a thing as biting off more than we can chew. It is practicable to organize local and State associations or exchanges; but I think it would not be feasible just yet to launch forth a national organization. Your general plan shows, however, how much might be saved by a national organization; and GLEANINGS will be glad to lend its columns for a general discussion of this kind. I may be mistaken; but I believe we should start from the lesser and work toward the greater. If I am wrong, I should be glad to co-operate with any reasonable effort for getting a national organization launched forth at once.—ED.]

FROZEN BEES REVIVED, AGAIN.

In GLEANINGS for April 15th, page 341, I find an assertion made that "bees chilled to death came to life again." The bees in question were only apparently dead, but not really so. Nothing can be raised to life again by natural means when life is once gone. More than 20 years ago I had the same experience during a very cold winter, with bees that were *like dead*, and "came to life" again. After a severe cold spell a colony was placed in the sun. A few bees came forth, and, flying about, they soon fell on the icy snow and remained there for about six hours. They seemed to be frozen to death. When I gathered them in a small pasteboard box and brought them into a warm room I could scarcely believe that life was yet in them; but after two hours the bees began to hum within the box. In many other instances, where bees were in nearly the same condition for a longer time they never came to life again. Considering this I am apt to judge that severe cold weather will not kill bees if they have plenty of honey just where the cluster of bees is sitting, provided cold spells do not last too long without interruption. That bees can ever be brought into a state in

which they hibernate, as some other insects do, without food, is yet to be proved. Experience shows the contrary, so far as my knowledge reaches.

St. Meinrad, Ind. ALPHONSE VEITH.

[It was Prof. Cook, or possibly some one else, years ago, who conducted a series of experiments to determine how long bees would stand a hard freeze without actually dying. The results secured by him are practically the same as those you arrived at.

No, I do not believe that any intelligent person ever believed for a moment that bees when actually dead could be brought to life again. Such a proposition is too silly to be debated for one minute.—ED.]

DENTS IN QUEENS; HOW TO REMOVE.

We notice in your issue for May 1, something about dents in queens, the editor thinking that dents sometimes do no harm. They certainly do no good, but why allow a dent to remain, when ten seconds will remove it? We have never come across a dented queen but that we could remove the dent; but the longer the dent remains, the more skill it takes to do it. Roll a sheet of paper an inch in diameter, then dent it. Now with thumb and finger press on each side of the dent, and it will snap out. Practice on that paper, and then try a queen. It is rather tedious work to take the dent out of some queens, yet it can be done.

In your issue for April 15 you ask for the names of those who are willing to help support a State organization of bee-keepers for Ohio. You may put our name on the list. We will try to be with you this coming winter; but in case we can not, our dollar will be.

H. G. QUIRIN.

Parkertown, Ohio.

[Hadn't thought of your plan before, of pressing out the dent—perfectly simple and feasible. By the way, I now see that on page 900, 1901, you described this operation, but I had forgotten it.—ED.]

HOW THE BEES WINTERED IN THAT CELLAR BLASTED FROM THE SOLID ROCK.

I have just removed the bees from that cellar blasted from the solid rock. I put in 58 stands Nov. 16; took out 58 March 23, which is ten days or two weeks earlier than we usually set bees out in this section. Soft maples have been in bloom since the 17th. This is the third winter my bees have come through without loss when wintered in that cave.

C. H. PIERCE.

Kilbourn, Wis., Mar. 23.

WHAT TO DO WITH COMBS BUILT CROSSWISE; WILL SHALLOW BROOD-CHAMBERS PREVENT SWARMING?

I bought a number of colonies in the regular Langstroth hives, but the bees have

had no attention for the last two years, and hence many combs are built crosswise, or at least so crooked that they can not be extracted. Now, I think that the bees will carry out the honey if these cases are placed below the brood-nest and on top of the brood-nest an ideal super be placed. Do you think that I shall succeed in having the honey carried out by the bees, and stored above the brood-nest?

Do you think it will prevent swarming if Ideal supers with starters of comb foundation are placed on top of the brood-nest as soon as the bees begin to bring home a little honey, although pollen is in abundance? I think you understand what I mean, for the bees are not gathering any surplus now or before April, and even later; but the swarming season is mainly in March, or just a little before honey is coming in in abundance.

A SUBSCRIBER IN TEXAS.
Goodwin, Mar. 7.

[Bees may or may not carry the honey to the brood-nest above. A good deal will depend on the season of the year. In the fall, toward the approach of cold weather, they might do so. What I should recommend would be to set these hives on a stand by themselves, give an entrance just wide enough for the bees to pass one at a time, and then let the bees rob it out slowly. Of course, if there are a good many bees in the vicinity, not your own, this plan would not be feasible, as it would lose you too much honey. The plan you propose would not prevent swarming. Of course, giving the bees plenty of room has a tendency to discourage it.—ED.]



SOME GLIMPSES OF CUBAN APIARIES, ETC.

First we give another view of Rambler's apiary, the same as is shown on page 400 of our last issue. By comparing this one with the one mentioned above you will see that it was taken from a different point of view.



RAMBLER'S APIARY FROM ANOTHER STANDPOINT.

On page 109, Feb. 1, I mentioned a visit to Mr. Ciriaco Gutierrez. On page 110 I described particularly this apiary, and I here present two views. No. 2 is taken from the back, and 3 from the front.

You will notice in Fig. 3 that one of the hives, instead of being made of a hollow log, is just a piece of palm-leaf rolled up. Any thing that sheds the rain will answer for a hive in Cuba. In one place I saw a bee-hive made of a piece of sheet iron rolled up. It looked like a section of stove-pipe. But that can not be, because they have neither stoves nor stove-pipes in Cuba.

Fig. 4 gives us a view of the little town of Paso Real. At the left you get a glimpse of the schoolhouse, the only building in town that has glass windows, and almost the only one that has a floor, except the postoffice. There are, perhaps, half a dozen stores, meat-markets, groceries, etc., but they are all on the bare ground. Most of them have a sort of porch out in front, and here the goods are often exhibited for sale. When it rains hard, the



FIG. 2.—BEES IN LOG HIVES IN CUBA.

horses are hitched in the shelter of this porch, and, as a consequence, more or less horse manure is found most of the time inside the porch in front of the store, close to the dry-goods and groceries. I believe the proprietor generally shovels out the droppings a little about once a day. When he has a big run of custom, however, he does not seem to get around to it *every* day. This state of affairs, however, is found mostly in the smaller towns. Where there is a population of one or two thousand, they usually have some nice stores and eating-places, especially right in the center of the town.

Fig. 5 represents your humble servant standing by a big banana-bush in the path at our Paso Real apiary. I did not expect my picture to be taken at that time; but one

cooking variety. When sliced up and fried, they are something between a nice sweet potato and a good Irish potato. I found



FIG. 3.—APIARY OF HIVES MADE OF HOLLOW LOGS, ETC.



FIG. 4.—PASO REAL.

of the boys who was visiting us from a neighboring apiary snapped his kodak on us. The banana nearest me has not yet sent up the bud that produces fruit; but it will later on, for every banana-tree bears fruit more or less once a year. The tree on the right, you will notice, has a bunch of fruit partly visible. There is a great variety of bananas in Cuba. Some are very small, and exceedingly sweet. Some are red and some yellow. And then there are great big bananas — larger than any thing we see here in America. These large ones are mostly the

them very healthful and appetizing. The banana grows with great rapidity. The one standing near me grew from the ground in one season. After it has borne a bunch of fruit it is cut off close to the ground, and then it grows up and bears another crop of fruit the next season.

Fig. 6 is a picture of Mr. Hilbert when he was on his way to pay a visit to Mr. Ciriaco Gutierrez, the man who gave us the stingless bees. The picture shows the royal palm-trees and other vegetation, and gives a glimpse of the country roads where ox teams haul things to market.



FIG. 6.—A CUBAN ROAD.

Fig. 7 gives us a glimpse of a couple of young ladies, or "senoritas," as they are called in Spanish. They are neighbors of Mr. Moe, and Mrs. Moe invited them over to give your humble servant a little reception. Of course, we could not talk very much together, but the girls were kind enough to give me some Spanish songs. I told one of Mr. Moe's hired men, the one who has the kodak, that I would give a five dollar bill for a picture of the younger one if he could get her while she was laughing and carrying on as she did there at Mr.

Moe's that evening. And I would give another five-dollar bill to have the readers of GLEANINGS hear the rattle of the tongues of these Spanish senoritas. And, by the way, some of the "senoras" (women) could keep up with them pretty well, I think. We have all heard about American women who could use their tongues, especially

when they were at a sewing society, or something of that sort. But my impression is that these Spanish women would get in more words in five minutes than any Amer-



FIG. 5.—OUR PASO REAL APIARY.

ican woman I ever came across could in fifteen. And then I began to wonder if even *they* could really comprehend or catch on to such rapid talk. But judging from the rattling rejoinder, I was forced to believe they did. The girls in question could talk Spanish to the boys and the rest of the family even if they could not to me. If I am correct, the two girls work for a living, and are carrying on a sort of millinery store. Mr. Moe laughingly said if I gave their picture in GLEANINGS he would be able to get plenty of help in his apiary from young men from the States; and he thought that may be they would be willing to work for reasonable wages, "in consideration," etc.

Fig. 8 is a picture of your humble servant while he is interested in rendering wax with the solar extractor. I was not posing for a picture; but if I remember correctly Stephen snapped his kodak on me without my knowledge or consent. If Mrs. Root had been consulted in regard to the matter she would have insisted that I go to the barber's and have a little slicking-up done before posing before our readers in this manner.

Fig. 9 gives a view of the royal palms, and one that shows the swell in the trunk in a remarkable degree. Notice what a slender stem comes out of the ground, and how it swells out like a mammoth seed-stalk onion. The bunches of berries that they feed to the pigs is seen right up under the foliage where the leaves branch out.

I have before stated that these swollen bodies are often used on a sort of drag for drawing water from the springs and streams.



FIG. 8.—RENDERING WAX WITH THE SOLAR EXTRACTOR.



But I say unto you which hear, Love your enemies, do good to them which hate you, bless them that curse you, and pray for them which despitefully use you.—LUKE 6:27, 28.

After I got on my wheel, as mentioned in our last issue, p. 453, I remembered that it was Saturday, and pretty well along in the afternoon; therefore it would be impossible for me to reach Taco Taco, 60 miles away, without encroaching on the Sabbath; and I will confess that for a while it seemed as if I would be almost excusable for pushing ahead, even on Sunday, especially as my mission was for peace, and it was not a very difficult matter to convince myself that I would be doing *missionary work* in reconciling Mr. de Beche to my young friend Gilson. Then I reflected that at Taco-Taco I could not find a Sunday-school, nor attend church service of any kind. So I decided to stop over Sunday with my friend Mr. Fraser and his wife at Guanajay. As it was, I did not get in till after dark. I found my way, however, to the parsonage, and was rejoiced to see the audience-room filled as usual, and to find my friend Fraser preaching a sermon. I did not know that

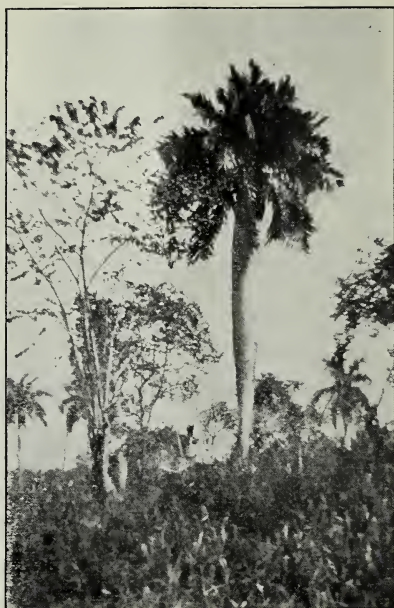


FIG. 9.—ROYAL PALM WITH ITS SWOLLEN TRUNK.



FIG. 7.—SPANISH SENORITAS.

he had a service Saturday night. In order that I might not disturb anybody I opened the door carefully, placed my wheel inside the court, and thought I would slip into the audience-room quietly, without disturbing any one. Now, the only door to the chapel opens into the corner of the room where the organ stands. Bro. Frazer, when he talks to his people, stands beside the organ. Just beyond him was a vacant chair, right beside (and a little back of) the speaker. This chair was the one I had been in the habit of occupying when I was present at the services. In order to reach it I would have to go in behind him. I thought I could do this without disturbing him or interrupting the sermon. I failed to consider, however, that the audience had not only become well acquainted with me, but that they would be sure to show the pleasant surprise on their faces when they caught sight of me in my accustomed seat just back of the pastor. It was too late, however; but when I sat down I tried to look unconcerned. Bro. Fraser read, by the broad smiles on the faces of his audience, not only of the old and young, but white and black, that something had happened; and he gathered from the direction toward which all eyes were centering that it was a little behind him, and off at his left. He stopped abruptly in his talk, and then turned right around and confronted me. Bro.

Fraser has a very expressive face. I think I never saw any one who could with his mouth, eyes, and brows—in fact, the whole of his face—express as much as he does. I presume he has acquired it to a certain extent by endeavoring to make the people understand when he had but an imperfect knowledge of their tongue. As he whirled around to see what was the matter with his audience I rose up and commenced an apology. When he gave me a pretty good shaking in the way of a welcome, there was a good deal of merriment among the little flock. He then turned to his audience and said, after he had finished, that *I* would give them a little talk.

Oh how happy I felt to find that little group so glad to see me once more! Just a few days before, I had told them I was going back north, and might never see them again; but I added that I would try hard to make them a visit the following winter. As I closed I said I hoped they would be able to understand me in English a year hence; or better still, perhaps, I could talk to them a little in Spanish. Well, on this particular evening when Bro. Fraser asked me to talk I reminded them of what I said on my former visit, and asked them if they had learned to speak English since that time. Now, these Cuban friends are always ready for a harmless joke, even in prayer-meeting; and instead of replying to my question they turned on me and asked why I had not learned Spanish (*español*) during the week or more that had passed. Then I told them a little story. The credit of my story belongs to the *Christian Endeavor World*.

MR. ROOT'S STORY.

"Years ago the millionaires in the city of New York decided to establish an asylum for babies that had neither father nor mother to care for them. They accordingly put up a beautiful building, installed it with the nicest cradles and little cots that money could purchase. They hunted up all the finest appliances, for caring for infants, that the world could produce. Then they got some of the best doctors; they had the temperature adjusted just right for babies; the milk was all sterilized; the water and the air were chemically pure, and the entire institution was up to the highest notch in a scientific way, and they supposed those babies would just grow and thrive, and be away ahead in point of health and intellect of those that grow up in filth, and play in the dirt. But in spite of all their skill—in spite of the beautiful cradles and little cots, the babies just cried and fretted and—*died*. The doctors could not tell what the matter was, and *nobody* knew why those little waifs should not be happy and healthy. Finally somebody suggested that they turn off the doctors and put the babies in charge of some good woman who *loves* babies. I think they hired some mothers who had had experience, and who, they had reason to know, could get hold of the babies and hug and kiss them in the old

orthodox way. Now, my friends, what do you suppose happened? Why, the babies stopped dying, got well and happy, and the institution was a success. The mortality was even less than in the outside world. The whole trouble was this: The poor babies hungered, not only for plenty of milk, but they wanted to be *loved* and *kissed* and *cuddled* and *talked to*. When they opened their eyes in this cold world, and found no one who loved them as babies ought to be loved, they said in their infantile mind, 'Why, we might just as well die now as at any other time. Nobody loves us, and nobody cares for us; and what is the use of living?'

"Now, little friends, what is the moral of this story? It is this: It is not only the *babies* of this world that want to be loved, but it is grown-up people also. If you wish to do anybody good, you must love him. The dear Savior said we should love even our enemies, and do good to them. If you want to bring boys and girls to Christ Jesus you must love them, just as those mothers loved the motherless babies. Just a little way from where we are gathered here to-night there is a reform farm where they are trying to make the bad boys of Cuba good boys. They have beautiful buildings and fine gardens, nice places for these boys to sleep, and plenty for them to eat; but unless there is somebody connected with that reform farm who *loves* these boys, even the bad ones, they will never make any progress in making them *good*. If there are bad people here in Guanajay, not only bad men and women, but bad children, we can never make them good unless we commence to love them. The dear Savior left his home in heaven, and came here to earth to save us all because *he loved us*. He came especially because *he loves sinners*. In fact, he once said that it was not the righteous but sinners he came to save. Sometimes people say God loves *good* little boys or good little *girls*. Now, this may be partly true; but it is not more than half the whole truth. God *especially* loves *bad* boys and girls, and bad men and bad women; and with this wondrous love of his he tries to make them good. God bless you, little friends; and when I come again to Cuba, may I not only find you loving one another, but loving the great outside world, and by this Christlike love endeavoring to bring more and more bad boys and girls into this mission meeting."

I will not take time now to tell you of the very pleasant time I had with Mr. Fraser and his wife the following Sunday. I told them where I was going, and had their prayers joined with mine for all the beekeepers in Cuba. By the way, it makes my heart bound now to speak the word "Cuba," especially when I pronounce it as the Spanish do—*Koo-bah*.

Just as soon as it was light I was off on my wheel. I had a good many adventures that I have alluded to elsewhere—at least some of them—before I arrived at Taco-

Taco, and stood before Rambler's old honey-house and home. Mr. Gilson saw me through the window; but he made haste to open the door, and seemed very glad to see me, although I thought he looked a little downcast and troubled. When I told him my errand he replied something like this:

"Mr. Root, if Mr. de Beche felt *half* as bad as I do about this whole affair, I pity him from the bottom of my heart. When I got home I could not sleep, and could eat but very little; and, to tell the truth, I have had hardly a moment's peace since I left Havana."

I need not take space to give his explanation of the matter; but I want to stop right here to put in a plea for the young boys who sometimes do foolish things. The best boy in the world when he is, say, from 18 to 21, is liable to err in judgment. Come to think of it, I have seen boys of 60 or more who occasionally did a foolish thing by just an error in judgment. Well, now, my dear brother, father, or whatever you may be, when those boys of 20 make a mistake or a foolish move, do not be too rough on them. Do not scold, and say that "anybody of common sense might have known better." For God's sake, remember how it was when you yourself were a boy. Remember the nights when you could not take your night's rest because somebody had been rough on you just because you were young in years. Make allowance; go slow; question carefully and gently before you make haste to hurt the poor boy's feelings, and before you crush out the manly spirit that is just beginning to assert itself in this boy. Even if he has been overbearing, even if he has been getting the "big head" just a little, don't be too rough on him. Reason with him kindly and gently.

When I asked Mr. Gilson about his talk with the consul, he explained it as I have already done. When I told him that Mr. de Beche and I could not be quite sure he was not going to sell the Rambler apiary and run off with the money, he burst into tears, and cried—I was going to say like a *child*; but I think I will add that he cried as any good man ought to cry when he is even *suspected* of dishonesty. "Finally," said I, and I am ashamed of myself that I did not say it any sooner, "Mr. Gilson, I begin to suspect that you are a Christian boy. Am I right?"

Between his sobs he replied:

"Mr. Root, when I left home in the far-away North I was not only a member of the church but I was superintendent of the Sunday-school. I would not touch a penny of what does not belong to me any more than I would commit suicide. I will give you and Mr. de Beche every opportunity you may wish to investigate my past record; and if I owe anybody on the face of the whole earth a copper that is not paid, let me know and I will pay it now."

Then he cried again. May be he will feel hard toward me for giving this glimpse of his inner life to the outside world; but

when I assure him that this simple little story will be the means of making life easier for perhaps a thousand more young men, I am sure he will forgive me. I asked him if he would write a brief letter to Mr. de Beche, apologizing for the way he did. He said he would most gladly; and in a minute more he was looking happy while he wrote the letter. My mission was successful—yes, more than successful; and when I knelt and prayed for him, for my friend Mr. de Beche, and for the rest of the beekeepers in Cuba, I felt again that I had made no mistake in visiting Cuba. God wanted me there; and it was his voice that called, as I told you last fall.

In due time I stood in Mr. de Beche's office again. I was well and happy. How could I be otherwise when I was running errands for the Master? Mr. de Beche was also smiling and happy. Almost his first words were that he had got a letter from Mr. Martin's relatives, explaining that the writer was in California at the time of the Rambler's death, and saying that that was the reason why he did not get an answer and thanks for his kind services sooner. When I handed him the letter from Mr. Gilson, explaining that it did not come through the postoffice, but that I went 60 miles to get it, and hoped that, under the circumstances, he would read it and forgive our young friend, he said at once, in a manly way, that of course he would let bygones be bygones; and I thought he looked especially happy as he read the letter, although I do not know what Mr. Gilson saw fit to write.

Now, friends, when you are tempted to think the world is cold and unfeeling—that everybody is looking out for No. 1, and that the best thing for you to do is to look out for No. 1 and let the rest go—when you are tempted to have these uncharitable thoughts, remember my Cuban story; and whenever you are tempted to get too low-spirited because somebody has served you a mean trick, or what looks like one, especially if that person should be a *boy* (may be a boy in experience if not in years), remember this Cuban story; and remember, too, my text for May 15, telling us not to be weary in well doing; and do not forget my story to the Cuban children about loving the babies. It *is* love that makes mankind better. It is not law, although law is right and proper when nothing else will do. And finally, dear friends, I hope you will have confidence enough in your old friend A. I. Root to believe that he is right when he says there are no circumstances, and nothing that *can happen* in business, or anywhere else, that would justify a man in taking his own life.

"LET US NOT BE WEARY IN WELL DOING."

The following, from a recent sermon by Rev. Jesse Hill, struck me so forcibly that I have thought best to give it here:

We grow discouraged because of the little progress we make or seem to make in the Christian life. A man can *become* a Christian in a minute; but it takes *time* to become a *saint*. He can become a Christian so quickly because that means becoming a pupil. A Christian is a learner, a disciple: he is an apprentice in the workshop of Jesus Christ. But perfection in sainthood comes only after long lapses of time, in the majority of cases. It takes years to broaden the sympathies. Will power is attained only by the constant choice of the right. The history of the growth of a Christian life is in this parable: First the blade, then the ear, then the full corn in the ear.



A LETTUCE-GREENHOUSE THAT COVERS THREE-FOURTHS OF AN ACRE.

May 2d it was my privilege to look over the lettuce-greenhouses of Mr. S. Shisler, of Beach City, Ohio. Nine years ago friend S. took a notion to grow Grand Rapids lettuce, and built a small greenhouse. His crop the first winter paid for the entire cost of the greenhouse and every thing connected with it; and every year since then he has been increasing his area under glass until now his plant covers just about three-fourths of an acre. He has been successful from his first investment up to the present time. Although he has expended nothing in the way of advertising, he has had more calls for lettuce, all the time, than he could supply. I think his average price is from 10 to 15 cts. per lb., according to the season. When I visited the lettuce-greenhouse of the Ohio State University, Columbus, you may remember I said they harvested a crop of lettuce every *six* weeks; but in order to do this they had strong thrifty plants twice transplanted, to be put into the beds not only the very day but the very hour the crop was removed. Well, Mr. Shisler can take a crop from his beds every *four* weeks. He does this by using only potted plants. The seed is sown on good compost, far enough apart to give the little plants plenty of room; and when large enough these are transplanted, say two inches apart in a good bed of rich soil. After they have made a pretty good root they are placed in 2½-inch pots. These pots are set in trays similar to those used for selling strawberries. In fact, Mr. Shisler used to be a strawberry-grower, and he uses his old strawberry-trays for holding these little pots. Of course, he uses the very best of compost, made of old stable manure and sandy loam, to fill the pots. You will remember that these trays of pots can be easily watered by sub-irrigation. Just set them in a vat containing water at just about the right height. The water will then soak up through the pots so as to get them all exactly right. He grows the lettuce in these pots until the roots have gone all through the soil and begun to "kiss" the sides of the pot, as our English friends express it. Now, then,

when he cuts a crop from a bed, the ground is worked over, and potted plants put in the place of those he took out. You may say this is lots of work. But he and his grown-up son attend to every thing without any other help than that from the night watchman. This man is employed to fire up, and keep the temperature just right; and between times he does all of the potting of the young lettuce-plants. It strikes me this man must be a pretty good sort of fellow, to be night watchman and do work enough to earn wages besides his duties as watchman. Yet I have heard watchmen say several times they would rather have some work to do than to sit down and get lazy, and may be become sleepy.

Mr. Shisler has experimented some on different styles of greenhouses; but he thinks now that the even span with buttled glass, and not very steep roof, suits him as well as any. You see there is an advantage in having a roof rather flat, in the way of saving glass. I suggested that heavy wet snow might prove to be a pretty severe strain on a roof made so flat; but he says he has had no trouble from that source. When the snow begins to be rather heavy he puts on more heat from the steam-pipes, and thus melts the snow off quite rapidly. He greatly prefers rain water for watering his plants, although they have very good well water. As he is out in the country one mile from Beach City he has no aid from the town water-works. A windmill pumps the water into an elevated tank, and this gives him head enough to do all his watering. I believe his windmill pumps the soft water out of cisterns also into this elevated tank. The houses are all connected. The gutters are down, perhaps, three or four feet from the surface of the beds. The beds are all on the ground. And, by the way, he has a splendid arrangement along the paths for supporting the earth in the beds. Instead of using boards, as most lettuce-growers do, he uses cheap heavy slate. One edge of the slate is let down into the ground—or, I might say, set down in the path—deep enough to keep its place. The upper edge rests in a bar of wood perhaps 2 inches square. A groove is made in the under edge to receive the top of the slate. These pine bars are supported by a stake driven in the bed flush with the top edge of the bar. As these stakes in time rot off, he thinks he will use iron stakes next time, bolting the wooden bar to the side of the metal stake. The wooden bar does not rot, because it is just above the surface of the ground in the bed.

Mr. Shisler uses overhead watering. He has pipes running under the ground all over the place, with places to screw on a hose about 50 feet apart. So far he prefers overhead sprinkling; but he thinks he will make some experiments in sub-irrigation. He gets rid of the green fly by fumigation.

Now, there is something wonderful in the fact that he has grown fine crops of lettuce every winter for nine years, in the same

ground; and, in fact, he has never removed the earth and put in fresh soil—not even in his first greenhouse. Of course, he manures heavily. He draws in stable manure from the town, and works it over, letting it ferment until it forms a compost; and this compost is the only manure that he has found profitable. He has not as yet undertaken to grow any thing in his houses in summer. After the last crop of lettuce is taken off—say about the first of May—the whole contents of the bed are permitted to dry up all summer long; in fact, they get to be as dry as dust; and my impression is that this thorough drying-out, in a measure, at least, sterilizes the ground. He has never had any rot to do any injury worth mentioning. He has had some damping-off when the plants were young. Of course, he may have trouble from rot or fungous diseases later on; but from the fact that he has had such good success with the same soil for nine years, it looks as if he had not very much to fear in that direction. Lettuce-rot is something queer, and oftentimes difficult to be accounted for. One man will have lettuce-rot right along, no matter what he does, whether he uses old ground or new every winter. Another man does not have it at all, no matter what *he* does.

When the sun gets to be so hot as to make the lettuce dark in color, and tootough, Mr. S. gives his glass a good coat of whitewash. So far his rafters are pine, or mostly that. I believe he has been using some chestnut, which does very well where you can find lumber straight-grained, and no knots. He says he does not care for a groove to carry off the drip water. Such water so far has done no harm worth mentioning.

Mr. Shisler enjoys working nuder glass. He is in love with the business or else he would not have succeeded as he has done. And is it not true, my friends, that the man who is in love with his occupation almost always succeeds, while he who goes into something he does not care much about, just because he gets an idea he can make money by it, seldom finds the money he is looking for? Choose an occupation that you are in love with, and then see to it that you do not let your love grow cold.

STRAWBERRIES, \$500 WORTH FROM HALF AN ACRE.

I sold, two years ago, within a few cents of \$500 worth of strawberries off from 26 rows 220 feet long, and I sold about \$300 from the same patch last year.

Sioux City, Iowa.

LEWIS LAMKIN.

Such reports as the above are valuable inasmuch as they indicate that great yields are confined to no particular locality. Mr. Hilbert gave us a big report from Northern Michigan, and Dr. Miller followed with one a little larger from his place; and now we have the above from Iowa. I think similar results may be accomplished in almost any locality if you go to work right, and have the ambition and enthusiasm that are needed to make a success.

OUR UNITED STATES WEATHER BUREAU.

Our friends may remember that, during the last of April, we had three or four days when it was very warm. Wednesday morning, April 29, the thermometer stood above 80; and when the weather-telegram reached us at 9:25 in the morning, reading as follows, it occasioned some surprise:

For Ohio, showers to night; colder in northern portion; Thursday, much colder, with rain, possibly snow on Lake Erie.

Washington, April 29.

As the weather still kept warm all day, there were many jests at the expense of the Weather Bureau. Thursday morning I was up about sunrise, waiting for Ernest to take me out with his automobile; and wanting something to do while I was waiting for him to waken I got a good broom (it was not a *new* broom; notwithstanding, in *my* hands it swept tolerably clean) and commenced sweeping the walk in front of the factory. With the great rush and the call for help in every department of our business I fear it had been many days since the walk had had a *good* sweeping; but as Ernest did not wake up I kept on with my sweeping until I got pretty well over to the railroad track; and I was still wielding my broom when the hands came to their work. The machinery now starts at ten minutes before six. Of course, there were quite a good many jokes because the president of the company was sweeping the walk in front of the factory. Some of them asked me if I had "marked my time;" others if I had got a new job; but a large part of the 228 hands now busy in our employ bantered me about the snowstorm that the Weather Bureau said was coming. I told them the weather was sometimes late, just as the electric cars and steam cars are sometimes late; but it would be sure to come sooner or later during the day.

Now, this whole matter was interesting to me because I had a glimpse of the way in which people look at the predictions of the Weather Bureau. I do not remember one in the whole lot who seemed to have faith enough in the Weather Bureau to believe that any great change was coming. Even the good pastor of our church came with a basket, wanting some plants from the greenhouse. I told him he was welcome to the plants, but I called his attention to the weather-flag; and even *he* seemed to have but little faith in what it portended. At 9:50 in the morning the following telegram came; but as the temperature was still above 80 when noon came, there was still more merriment about the promised snowstorm.

For Ohio, rain and colder to-night; Friday, rain in southern portion, rain or snow in northern part; much colder.

Washington, April 30.

I was watching the barometer, however, and I informed everybody there was a big storm close at hand. The weather was so *very* warm, however, and so few clouds were visible, I myself told Mrs. Root I did not think the grandchildren needed to take

umbrellas and water-proofs in going to school. Between one and two, however, I noticed the wind was rising rapidly (it blew fearfully at noon), and swinging to the north, with but little change in temperature. A little before two o'clock rain set in, and it grew colder rapidly; and in less than twelve hours the rain had changed to snow, and the mercury dropped from 80 to 30, or something over 50 degrees in twelve hours. Friday morning, May 1st, icicles were hanging to the hydrants; but as it was a freeze instead of a frost, fruit suffered but little or none. All day, May 1, the temperature was but little above 40, and everybody predicted the ruin of the fruit. We market-gardeners have a sort of rule that, when the temperature is 50° or lower at sundown, a killing frost may be expected. On the morning of Friday, May 1st, however, the Weather Bureau was at hand telling us that Saturday would be warmer, and that there would be only a light frost Friday night. I confess that, at eight or nine o'clock, it looked to me as though we were bound to have a killing frost; but I was agreeably surprised Saturday morning, May 2d, to find only a little frost in spots, and but little if any damage done. Now, the point I wish to emphasize is this: The average man, woman, and child will persist in confusing the predictions of the Weather Bureau with the silly talk of Hicks and others of his stripe who pretend to be able to predict what the weather will be a whole year ahead. In the above case the Weather Bureau did not attempt to give warning until the storm was only two days or a little more distant. They were right in every particular except that it did not reach Medina quite as soon as they said it probably would.

Now, this one single prediction of the Weather Bureau probably saved the people of the United States thousands of dollars—that is, if they gave heed to the timely notice; and the predictions, also, that there would be no killing frost that Friday night probably saved other thousands by letting fruit-men and gardeners know that warmer weather was just at hand, and would modify the threatened frost.

Temperance.

GIVING THE WHISKY BUSINESS "FAIR TREATMENT."

We take pleasure in clipping the following from the *Modern Farmer and Busy Bee* for May:

Some few people have ordered their papers stopped (which is their privilege, of course) because of the position we have taken with regard to whisky advertisements. They say that we are not treating the whisky business fairly. We would like to know what whisky has ever done for humanity to entitle it to any consideration. It has filled our prisons and almshouses; it has dwarfed the intellect and stunted the moral nature of multitudes of people; it has brought poverty, want, and wretchedness to many families; it has spread crime, disease, sickness, and death in its path-

way; it has ruined the life and prospects of many a true and noble young man; it has brought disappointment and heartaches to many a beautiful, loving, and true woman; it has filled the world with crime, misery, sorrow, and disappointment; it has always carried in its wake squalidness, imbecility, inefficiency, and vacillation of character; it carries on its face the brand of illegitimacy; it is sold in the darkness and on the sly behind curtained windows and closed doors, and no respectable citizen thinks of frequenting the saloon in the same open, bold, and above-board way he does a bank, a drygoods store, or a bakery. On Sunday he goes in at the front door of the church or lecture-hall boldly and openly, but he sneaks around to the "side door" of the saloon, and behind closed doors and closely drawn curtains takes his drink, and hurries out almost ashamed to be seen by those who have come on the same errand and in the same sneaking way which he has himself. Will some one tell why this is so? Why is it that it is not thought necessary to put screens before the doors, and curtains at the windows of other places of business? If the saloon has any excuse for existence, if whisky has any good in the world to its credit, we are free to confess that we do not know what it is. It is reported to have saved the lives of some people who have been bitten by rattlesnakes, but we are inclined to doubt if it can rightly lay claim to even this much good. If it can, it is on the doctrine of "Similia similibus curantur," cure poison with a more deadly poison.

I should like to give the above such a hearty amen that every reader of GLEANINGS could hear it. Not many years ago there was a warm discussion in regard to being too severe on the dram-seller. Somebody said I was not treating the saloon-keepers fairly, to which I replied, "My good friend, if a mad dog should get loose in your streets, and was biting men, women, and children right and left, would you stop those who were hot in its pursuit to remind them that, whatever they did, they must treat the mad dog fairly?" Somebody said that my comparison was not "fair." I replied the only thing unfair about it was the mad dog was destructive to human life only, while the saloon-keeper destroys body, soul, and spirit. I was well aware that friend Abbott is a born orator, but in the above extract he has more than sustained his reputation as a vigorous speaker and writer.

WHISKY ADVERTISEMENTS.

In going in and out of Cleveland on the new electric railway one sees out in the fields, and in a good many places, big flaming whisky advertisements. One of the most glaring (and "galling") is one that reads, "Wilson Whisky," in letters a foot long or more. Right under it, in smaller type, is, "That's all." Yes, they have the same thing on garbage-boxes all through the city. There has already been a protest sent in to the mayor, about having whisky advertisements on the neatly painted boxes for rubbish that are scattered all around, even in front of handsome homes. But the signs are there still, so I suppose the city fathers decide the revenue from the whisky men, for this advertising, more than counterbalances the protests from Christian people whose feelings have been outraged. I said to myself several times, and pretty emphatically, it is not "all," or else I am greatly mistaken in the temper of our people. I for one would like to see war on this matter, right here in our own land, if nothing but war will remedy such a state of affairs.

Will Carlton (the "Farm Ballad" man) seems to feel very much about it as I do. Below is an extract from his magazine for May:

Every Where will now publish its first whisky advertisement. It has had several offered to it, with good pay, from men who are lining their own pockets by destroying the lining of other people's stomachs; but it has never accepted any of them, not wishing to profit from that kind of money. This advertisement is gratuitous.

In riding along the railroads, representatives of our magazine have often seen mammoth signs in the fields and by the fence-sides, labeled "Wilson Whisky: That's All." They are intended, no doubt, to convey the idea that, when whisky is of that particular brand, it is all right, nothing more need be said, and the drinking may go merrily on. And it may be as good whisky as any that is made, so far as we know; but in connection with any whisky whatever, what a miserable lie rests in those two words—"That's All!"

"All?" There is no whisky manufactured upon this earth that may not draw up the nerves so tightly as to make them unduly loose when the tension is taken away; that may not to some extent injure the beautiful and accurate machinery with which God equipped the human form; that may not push the body a little further on its way to destruction. "All!"

"All?" There is no whisky that may not put into the system a certain amount of alcohol that should not be there; that does not augment the effect of such virus as is already in the blood; that does not have a tendency to destroy healthy digestion and proper circulation; that does not contribute another impulse toward the frying of the brain. For heaven's sake, of what was that advertising-agent thinking when he wrote and had painted those two words, "That's All!"

More yet: It leads the body into danger. A simple fall upon the earth may not hurt the drunken man so much as a sober man, for his body is more relaxed through his very recklessness; but when he falls into the fire it hurts him; when he tips over a kerosene-lamp it hurts him; when he lies in a stupor and is crushed by the carwheels it hurts him; when he gets into a senseless, brutal fight, he is very apt to get hurt—sometimes killed. "Wilson Whisky—that's all!"

More: The wet-rot of the stuff soon pushes his mind into decay. He may show spasmodic brilliancy now and then that he could not have produced except for liquor; but it is at the permanent expense of his faculties. The mental products that he gives forth in such cases savor of the sickly hothouse rather than the healthy garden. Any habitual drinker may know that his mind has not only reached its highest development, but has commenced its decadence, and that, however people may laugh at his "brightness" now, he is really on the road to practical idiocy. Every time he performs the role of a lunatic he takes a long step toward permanent mental paralysis. "That's all!"

Worse than any thing thus far said, his moral sensibilities soon become clouded. He gradually learns to lie, to cheat, to blaspheme, to blackguard, and to murder, either all at once or gradually. Sometimes, in lucid intervals, he gets a straight look at his own character; and then how he does despise the picture! He curses his own weakness, and the strength of the adversaries that are pulling him down—the men who sell whisky, the men who make it, the men who advertise it in newspapers and on walls. It was not bravado merely that prompted one Iowa rum-seller to put a sign up over his door, reading, "The Way to Hell."

But even the above is not "all." It is only a small part of it. As soon as a man gets drunk he is likely to become a public nuisance and menace. He insults women on streets and in railroad-coaches; he carries the pestilence of his disorderly presence and his putrid breath into whatever company he goes. "All!"

He makes his home into a saloon; his wife into a hopeless drudge; his children into the worst kind of orphans. He does his best to undermine the foundations of his country, and of all countries—home. When he comes back to it he is a terror; when he goes away from it he is a fear and a dire apprehension. Nobody knows what he will do while in liquor. "All!"



THE PHILOSOPHY OF CATCHING COLD.

The following, from T. B. Terry, has so much good sense in it, and makes the matter so plain in regard to the way we catch cold, that I take it entire from the *Practical Farmer*:

All readers do not quite understand what has been said on this point, judging by letters received. I said exposure to cold is not the real or primary cause of the condition known as a cold. I will try to explain more clearly. Suppose we had a gasoline stove in our house, and it should spring a leak. The escaping gasoline, changing into gas, mixes with the air. I know there is a leak there, but neglect it carelessly. By and by I come in: and, wishing to light a lamp I strike a match. Instantly an explosion occurs that injures me considerably, to say nothing of the damage to the house. Now, what would you say was the cause of the explosion? Why, the leaking of gasoline. Not one of you would say, "I think it came from lighting a match." And still that was the secondary (or incidental) cause. The primary cause, which all would think of as the real one, was allowing that gasoline to escape into the room. And I doubt not many would say I deserved the injury received. I don't think one of you would advise me to avoid striking matches in the future, but rather to see that there was no gas that the match could ignite, and that would be good sense. Now, I am convinced that the real, primary, or first cause of so-called colds is invariably from within, and not from exposure to cold. It is over-eating, breathing impure air, lack of exercise, lack of bathing, or something of this kind. The blood becomes overcharged with impurities. Nature tries to discharge these through the mucous membrane, usually in the head, because the proper channels are unequal to the task. The secondary or exciting or incidental cause of the cold, the last straw that brings the matter to a climax, may be a chill from exposure to cold. When the system is in the condition named above, the reactive powers will be weak, of course. But, for this unhealthy condition, exposure to cold would do no hurt. The climax may also be brought on by eating when over-tired, or by overdoing in any line. Now, when you get a cold, and are asked how you came by it, why not be as sensible as when talking about the gasoline explosion? Why lay the blame in one case to the real cause, and in the other to the secondary or exciting one? There is as much reason for saying Terry struck a match and it blew him up, as for saying you went out without any rubbers, and caught cold, or facing that wind yesterday, or sitting near that window, which caused a little draft of air, gave you a hard cold. If you were all right internally, no trouble would come from any of these matters, any more than from my lighting a match when there was no gas around. In proof of this, why have you not always taken cold when exposed to cold air? Simply because your system was in a healthy condition when you did not. A person in vigorous health, with pure blood coursing through his body would not be affected unfavorably in the slightest degree by these exposures to cold. Which is better—to remove the fundamental cause, or leave it there and try to be very careful about any possible exposure that may bring on a climax? With this kind of care you are constantly making the body weaker and less resistful, and making yourself more and more a hothouse plant. If you will pay reasonable attention to the plain laws of health, particularly to breathing fresh air, not overeating, and taking proper exercise, you may soon get in such good health that exposure to cold will not have any injurious effect. In fact, fresh cold air will act as a tonic, building up your vital powers still higher. To test this matter, last August, when the days were very warm and the nights cool, so my bedroom was so warm no covers were needed to make me comfortable at bedtime; but before morning I was glad to draw a blanket over me. I lay down about a score of nights without anything whatever on or over me—not even a night-shirt. About 2 A.M. I would waken and find myself nearly as cold as ice as the four large windows were wide open. Then I would cover up warmly and go to sleep again. No harm whatever came of it. I was cold, and got

over it again—that was all. But my blood was not clogged with waste material. It was pure, and circulating properly, caused by attention to matters named above. Under these conditions I will wear an overcoat a few days, if I wish, and leave it off when an extra-cold day comes. I will even go without my underclothes any day in winter, or sit by an open window in a hall where a meeting is held, and let cold air blow directly on me, or do any thing else that people generally think causes a cold, and no bad effects will follow. I have tried these things enough to know. But were I overeating—eating from habit when food was not strongly wanted and relished, and taking insufficient exercise, and breathing impure air largely, then I should not dare to take such chances. By the way, to get fresh air, the other night I got out Mr. Henry, who carries a screwdriver on purpose, to take off the outside storm-sash from my bedroom window. The glass was out of one-fourth of the inside window, and I was glad of it, although it was zero weather. My only fear was that they might put it in, as the sash was stuck so it could not be raised; but they did not, and I breathed in good health nine or ten hours each night. I believe in these matters I advocate, good friends, and use them to keep in the best health.

Hudson, Ohio.

Tobacco.

For obvious reasons we withhold the name and address of the writer of the following letter:

Mr. A. I. Root.—In the early eighties a relative obtained a smoker from you on the promise never to use tobacco again. This promise was not what you called for. The fact is, he *never used tobacco*. His children protested at the time. He always seemed to be an honest man otherwise. He passed on "over the river" a year ago. I used the smoker last season, probably the last it will ever be used. Every time I lit it last summer the thought would come, "This smoker never was paid for. It ought to be paid for." Though I was in no way responsible for his getting it, still I have used it, and don't know why I shouldn't pay for it. I inclose money order for 75 cents.

May the Lord be praised, dear friend, that there is at least here and there a man who wishes to shun even the appearance of evil, and who recognizes that he is, at least to some extent, "his brother's keeper." Another thing, it gives evidence, at least indirectly, that the present generation is more honest than the one preceding it. I believe it is true that mankind in general are getting to be a little more keenly sensitive to the importance of being honest in their actions as well as in words. Seventy-five cents is only a small matter, I know, but it rejoices my heart to know that we have a start made by at least one person in regard to this matter of conscience. Now, is there not some one else who will be moved by this little story to fix up something that happened long ago? I do not mean to put in a plea for what may be due The A. I. Root Co., but rather for what may be due your fellow-man. It is a good investment—yes, a magnificent investment—as I happen to know from *personal experience*. Look back over your life, and pay up whatever you find is not exactly square or is not what it should be. It may not make you any richer in this world's goods, but it will make you richer when you come to make that last review before death calls. Once more let me quote, "What shall it profit a man if he gain the whole world and lose his own

soul?" Keep the voice of conscience in good running order, so it may speak out sharp and bright and clear. Do not snub it by your acts, and make its voice so faint that it will in time be no longer heard. Now, dear friend, I wish it were my privilege to give your name, but may God bless you for this little act.



The Century Sprayer
a small out of which is shown in this advertisement, offers more advantages to the orchardist, fruit grower, etc., than any other spraying outfit on the market.
Frass cylinder, brass valves, "everlasting" fabric plungers, packing, and the only thoroughly reliable agitator.
Cylinder 2½ ins. stroke 5 ins. Then, too, it sells at a lower price than other good pumps. Send for handsome free catalogue, showing full line of pumps and twenty varieties of sprayers.
THE DEMING CO., Salem, O.
Western Agents—Hendon & Hubbell, Chicago, Ill.

Root's Goods in Central Michigan!

Sold at their prices. Present given with each order amounting to \$2 or over. List sent free.

W. D. Soper, Rural Route No. 3, Jackson Michigan.

Readers OF Gleanings

desiring to know the results of my forty years' experience in rearing queen-bees, and to learn of my new process of producing queens, can do so by purchasing a copy of **IMPROVED QUEEN-REARING**. The book and a valuable Adel breeder sent by mail for \$2. Prospectus and catalog ready. *Adel bees have a world-wide reputation.*

Henry Alley, Wenham, Mass.

RED-CLOVER QUEENS!



We are now ready with as fine queens as can be reared. Untested, 75 cts.; tested, \$1.00; breeder, \$3.00. Nineteen years in queen-rearing. Send for my circular; it is worth \$10 to you. Satisfaction guaranteed.

G. RUTZAHN, BIGLERVILLE, ROUTE 3, PENN.

QUEENS DIRECT FROM ITALY

Fine, reliable. English price list sent on application. Beautiful results obtained last year. OUR MOTTO—"Whatsoever ye would that men should do to you, do ye even so to them." Address

MALAN BROTHERS, Luserna, San Giovanni, Italy.

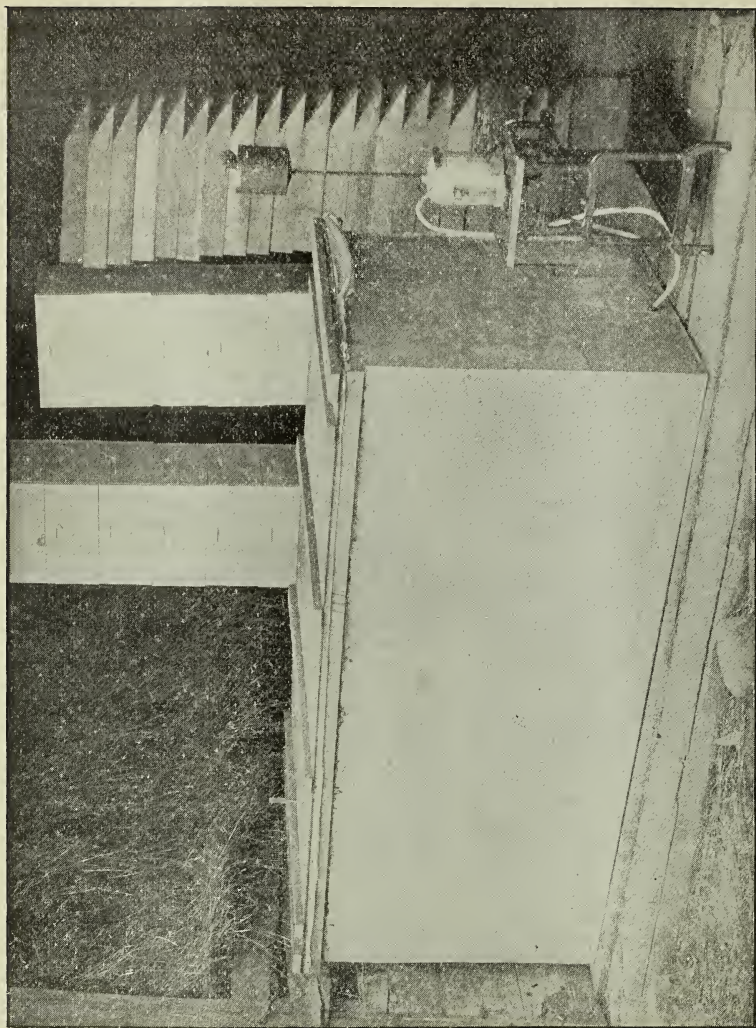
POULTRY JOURNAL

How to Make Poultry Pay. A paper worth a dollar, but will send it to you one year on trial, including book, Plans for Poultry Houses, for 25c. Sample copy FREE.

Inland Poultry Journal, Indianapolis, Ind.



THE VERY BEST GRADES AND WARRANTED TO BE PURE
HONEY
ADDRESS
The A.I. Root Co.
MEDINA
OHIO.
~ ~ ~ ~ ~



C. A. Huff's Tank for Fumigating Foul-Broody Combs.

There is a descriptive article accompanying this cut in the May REVIEW, showing how Mr. Huff destroyed foul brood in combs by fumigating them with formalin gas. Send ten cents for this number, and with it will be sent two other late but different issues, and the ten cents may apply on any subscription sent in during the year. A coupon will be sent entitling the sender to the REVIEW one year for only 90 cents.

W. Z. Hutchinson, Flint, Michigan.

For 1903 You Require **PERFECT QUEENS** I Supply

Norristown, Pa., March 14, 1903.

Dear Sir.—Find inclosed \$1.00 for one untested Golden queen. . . . I wish you would send a queen just like I bought of you last spring. It is one of the best and prettiest queens I ever had. At present my apiary numbers 35 colonies.

Yours truly,

HENRY A. MARKLEV.

These queens are giving general satisfaction. Try some. Address

GEO. J. VANDE VORD, Daytona, Fla.

Pure Italian Queens in State of Washington!

My friends and patrons I wish to thank for their many kind words; my aim is to do still better. Mistaking will be rare if ever. I keep only pure stock. Have imported queens from some of the most prominent breeders, and queens are reared by the natural-swarming process. Prices in May and June: Tested, \$1.50; untested, \$1.00; after June, 25 cts. less for either.

Robt. Mirring, Dryad, Lewis Co., Wash.

When you need Queens

and want your order filled at once with the *best* queens that money can buy, we can serve you and guarantee satisfaction. We have a fine strain of Italians that can not be excelled as honey-gatherers. We can furnish queens from either imported or home-bred mothers. Choice tested, \$1.00 each. Untested, 75c.; \$8.00 per doz.

J. W. K. Shaw & Co., Loreauville, La.

Do You Know that you could come nearer getting what you want, and when you want it, from the New Century Queen-Rearing Co. (John W. Pharr & C. B. Bankston), than anywhere in the United States? Untested, 50c.; tested, 3 and 5 band, 75c.; all other races, \$1.00. Send for circular.

Berclair, Goliad Co., Texas.

"Dollar Italian Queens"

Ready for delivery May 10. Send for price list.

E. E. Lawrence, ; Doniphan, Missouri.

QUEENS

**Golden Italian &
Leather Colored**

Warranted to give satisfaction, those are the kind reared by **Quirin-the-Queen-Breeder**. We guarantee every queen sent out to please you, or it may be returned inside of 60 days and another will be sent "gratis." Our business was established in 1888, our stock originated from the best and highest-priced **Long-tongued Red-clover Breeders in the U. S.** We send out fine queens, and send them promptly. We guarantee safe delivery to any State, continental island, or European Country.

The A. I. Root Co. tells us that our stock is extra fine, while the editor of the *American Bee Journal* says that he has good reports from our stock, from time to time. Dr. J. L. Gandy, of Humboldt, Nebr., says that he secured over 400 pounds of honey (mostly comb), from single colonies containing our queens.

A FEW TESTIMONIALS.

P. F. Meritt, of No. 13 Breckenridge St., Lexington, Ky., writes: The bees sent me last July did splendidly. Each colony has at least 75 lbs. of honey—pretty good for two-frame nuclei.

Mr. J. Roorda, of Demotte, Ind., writes: Send me six more queens, the 48 sent me last spring are hustlers.

Mr. Wm. Smiley, of Glasgow, Pa., writes: Your bees beat all the rest, now send me a breeder of the same kind.

A. Norton, Monterey, Calif., writes: Your stock excels the strain of Mr. —, which is said to outstrip all others. Your stock excels in profitable results as well as in beauty.

Price of Queens Before July First.

	1	6	12
Selected Warranted.....	\$1 00	\$5 00	\$9 50
Tested.....	1 50	8 00	15 00
Select Tested.....	2 00	10 50	
Extra Selected Tested—the bcs. that money can buy.....	4 00		
Two-frame Nuclei, no Queen.....	2 50	14 00	25 00

Add the price of whatever queen is wanted to that of nuclei. Our nuclei build up fast, and if not purchased too late will make some surplus.

Queen-rearing is our specialty; we give it our undivided attention, and rear as many queens (perhaps more) as any breeder in the North. No order is too large for us, as we keep 300 to 500 on hand ready to mail. Send all orders to

Quirin=the=Queen=Breeder, Parkertown,
CHIO.

Strong Testimony in Favor of

Moore's Strain of Italians

Prof. Frank Benton, of Washington, D. C., whose name is familiar to all progressive apiarists, says:

"I have several times, in the course of correspondence, and in conversing with bee keepers, had occasion to answer the question: 'Where can the best Italians be got?' It is, perhaps, not an easy thing to say, with certainty, but at least I have felt I might be able to tell where GOOD ones could be obtained. A number have been referred to you, for, although I have not tested your stock personally, I thought I knew pretty well, from general reputation, its character. A bee-keeper near here—Geo. A. Lanphear, of Vienna, Va.—who got some queens of you on my recommendation is so well pleased with them—in fact, gives your bees such a good recommendation to me for gentleness and working qualities, particularly their working on red clover, that I thought I would like to try some myself."

I was not aware that Prof. Benton was recommending my stock until I received the above letter. Such testimony as this certainly has great weight, and shows why my business has grown so fast.

Prices for daughters of my 23-100 breeder, the prize-winner, and other choice breeders: Untested, \$1.00 each; six, \$5.00; dozen, \$9.00. Select untested, \$1.25 each; six, \$6.00; dozen, \$11.00. Safe arrival and satisfaction guaranteed. Send for descriptive circular.

My 23-100 breeder was awarded a \$25.00 prize by The A. I. Root Co. for producing bees showing the longest tongue-reach on record. Competition was open to the whole world.

J. P. Moore, L. Box 1, Morgan, Kentucky.

Pendleton County.



Queens

My specialty is queen-rearing. I rear two strains only—Long-tongued Red-clover Three-banded and the Golden Five-banded that work red clover as well as the three-banded. These two strains are the best bees in this country, all things considered. I furnish more dealers with queens than any other breeder in this country. Why? Because the queens give their customers the best satisfaction. I insure all to be purely mated. Untested, 75c each; tested, in April, \$1.25—after April, \$1.00 each. My former address was Caryville, Tenn., but my queen trade has doubled for several years and I have moved to Texas. Remit by postal money order to Daniel Wurth, Karnes City, Karnes Co., Texas.

**Laws' Leather-colored Queens.
Laws' Improved Golden Queens.
Laws' Holy Land Queens.**

W. H. Laws:—Your queens have proved to be excellent. My apiary stocked with your *Leather* queens are a sight to behold during a honey-flow, and the *Goldens* are beyond description in the line of beauty. Yours are the best for comb honey I ever saw. I want more this spring.—E. A. Ribble, Roxton, Tex., Feb. 19, 1903.

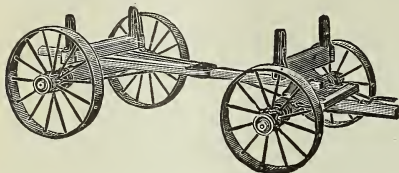
W. H. Laws:—The 75 queens (Leather) from you are dandies. I introduced one into a weak nucleus in May, and in September I took 285 lbs. of honey, leaving 48 lbs for winter. My crop of honey last season was 48,000 lbs. I write you for prices on 50 nuclei and 150 *Leather* queens.—Joseph Farnsworth, Idaho Falls, Idaho, Feb. 16, 1903.

Prices of Queens: Each, \$1.00; 12, \$10.00. Breeders, extra fine, guaranteed, each \$3.00. Send for price list.

W. H. Laws, Beeville, Texas.

Farm Wagon only \$21.95.

In order to introduce their Low Metal Wheels with wide Tires, the Empire Manufacturing Company, Quincy, Ill., have placed upon the market a Farmer's Handy Wagon, that is only 25 inches high, fitted with 24 and 30 inch wheels with 4-inch tire, and sold for only \$21.95.



This wagon is made of the best material throughout, and really costs but a trifle more than a set of new wheels, and fully guaranteed for one year. Catalog giving a full description will be mailed upon application by the Empire Manufacturing Co., Quincy, Ill., who will also furnish metal wheels at low prices made any size and width of tire to fit any axle.

Chicago to Colorado.

New overland service via Chicago, Milwaukee & St. Paul and Union Pacific line. Thro' sleeper and free reclining-chair car to Denver from Chicago 10.25 p. m. daily. No changes nor delays.

Booklets and folder free.

F. A. MILLER, Gen. Passenger Agt., Chicago.
E. G. HAYDEN, Traveling Passenger Agent,
217 Williamson Bldg., Cleveland.

Cuba.

If you are interested in Cuba, and want the truth about it, subscribe for the

HAVANA POST,

the only English paper on the Island. Published at Havana, Cuba. \$1.00 per month, \$10.00 per year. Daily (except Monday).

Squab Book Free



Squabs are raised in 1 month, bring big prices. Rager market. Money-makers for poultrymen, farmers, women. Here is something worth looking into. Send for our **Free Book**, "How to Make Money With Squabs," and learn this rich industry. Address
PLYMOUTH ROCK SQUAB CO.,
19 Friend St., Boston, Mass.

Carniolans and Italians. Choice Queens a Specialty

Having added extensively to our queen-rearing plants in the North and the South we can furnish any number of queens on short notice.

Carniolans. Very prolific, hardy, gentlest bees known. Great comb builders. Sealed combs of a snowy whiteness. A worker on red clover.

Italians. Gentle, prolific, swarm very little, fine workers, and a red-clover strain.

The Carniolan-Italian Cross. A cross giving the combined qualities of each race, are hustling workers, the coming bee for comb honey.

One untested queen, \$1; 6 for \$5; 12 for \$9. Tested, \$1.50. Best breeder, \$3. Best imported breeder, \$5. For full colonies, one or two frame nuclei, large orders for queens, send for descriptive price list. Orders booked now will be filled when desired.

F. A. Lockhart & Co., Caldwell, N. Y.

QUEENS for BUSINESS and PROFIT

These are to be had of Will Atchley. He is now prepared to fill all orders promptly, and breeds six different races in their purity. You must remember that all of the PURE Holylands that now exist in the U. S. originated from the Atchley apiaries, and they have the only imported mothers known to the United States. Untested queens from these races, 3 and 5-banded Italians, Cyprians, Albino, Holylands, and Carniolans, bred in their purity from 5 to 35 miles apart, February and March, \$1.00 each or \$9.00 per dozen. All other months, 75c each, \$1.25 for six, or \$3.00 per dozen. Tested queens of either race, from \$1.50 to \$3.00 each. Breeders from \$3.50 to \$10.00 each 1, 2, and 3 frame nuclei and bees by the pound a specialty. Prices quoted on application. Safe arrival and perfect satisfaction guaranteed. A trial order will convince you. Price list free. **WILL ATCHLEY,**
P. O. Box 79, Beeville, Bee County, Texas.

\$QUEENS--\$BEES--NOW.

A. L. Swinson, Queen-breeder, furnishes best to be had in U. S. First-handed, Warranted queens, \$1.00. Tested, \$1.50. Breeders, \$5 to \$10. American Albino Italians, and Adels mated to Albinos.

SWINSON & BOARDMAN,
Box 358, Macon, Ga.

Do You Buy Queens

If so, it will pay you to investigate my claims. I breed from best honey-gathering stock, and rear queens by best-known methods. I guarantee good queens, and beautiful, gentle bees. Some of my customers have bought 100 to 300 queens per year for their own yards. Write for circular and information.

Untested queens, \$1.00; \$9.00 per dozen; tested, \$1.25.

J. B. CASE, Port Orange, Fla.

Golden or Leather-colored Honey Queens

bred from the Laws strain. Untested, 90 cts.; tested, \$1.00; selected tested, \$1.50; extra selected tested, \$2.00; breeders, \$2.50 to \$5.00. None better.

H. C. TRIESCH, Jr., Dyer, Ark.

Queens == 1903 == Queens.

We have ten different yards five to twenty miles apart, where Italians, Cyprians, Holylands, Carniolans, and Albinos, are bred for business. Tested queens, \$1.50; \$8.00 for 6; \$15.00 per dozen. Untested, \$1.00 each; \$5.00 for 6; \$9.00 per dozen. Our best and finest breeders, \$5.00 each. One and two frame nuclei a specialty. Bees and Queens in any quantity to suit purchaser. Safe arrival and reasonable satisfaction guaranteed. ORDER "The Southland Queen," \$1.00 per year. Send for sample copy and our 1903 catalog; tells how to raise queens and keep bees for profit.

Root's Supplies.

The Jennie Atchley Co., Box 18, Beeville, Tex.

WAX PROFITS.

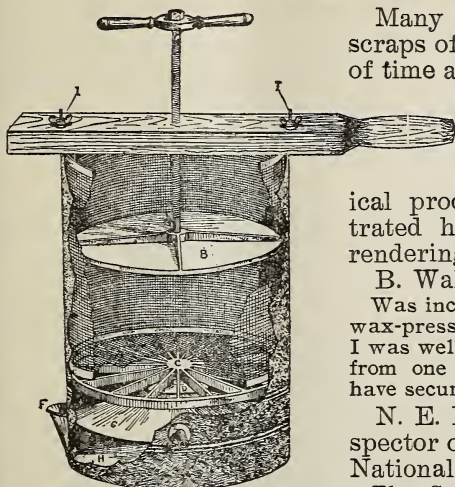


Fig. 169.—The Root-German Steam Wax-press. Price \$14.00. Shipping weight, 70 lbs.

Many bee-keepers allow old combs and scraps of beeswax to collect, which, for lack of time and the proper utensils, are scattered or eaten up by moth-worms. A big item would be added to the year's profits by the timely rendering of said wax by an economical process. We believe the press illustrated herewith fills a long-felt want in rendering wax.

B. Walker, Clyde, Ill., says:

Was inclined to believe at first that the German wax-press was a failure; but after a thorough trial I was well pleased. I secured 30 lbs. more wax from one day's use of the machine than I would have secured by the ordinary method of rendering.

N. E. France, Platteville, Wis., State Inspector of Apiaries, and General Manager National Bee-keepers' Association, says:

The German wax-press is by far the best machine or process to save wax from old black brood-combs.

Manufactured by

The A. I. ROOT CO., Medina, Ohio, U. S. A.

We are now paying 30c cash, 32c trade, for average wax delivered at Medina.

SLUG SHOT

kills currant-worms, potato-bugs, cabbage-worms, and insects on flowers; used 22 years successfully. Sold by the Seed-dealers. For booklet on Bugs and Blight, address

B. Hammond, - Fishkill-on-Hudson, - New York.

HOW TO Make Money

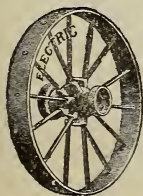
Any one willing to work can make \$18.00 per week selling our absolutely new Pocket Dictionary and Atlas of the World combined; 90 clear concise maps; 35,000 words defined; fits the pocket; worth a dollar to anybody. Send 25 cents for sample and terms.

Rand, McNally & Co., Chicago, Illinois.

Envelopes!!

Printed to Order \$1 per 1000

Heavy, white, high-cut, size 6 3/4. A neat little coupon on each envelope will earn you dollars. Other stationery cheap. For particulars and sample, address at once Howard Co., 516 Masonic Temple, Chicago, Ills.



In Olden Days

men were broken on the wheel, now they buy

Electric Steel Wheels, and save money. They fit any wagon. Made with either staggered or straight spokes. Let us tell you how to make a low down wagon with any size wheel, any width tire. Catalog tells. It's free. Electric Wheel Co., Box 95 Quincy, W.

The A. I. Root's Co's Goods in Oklahoma.

Save freight by buying of F. W.

VAN DE MARK, RIPLEY, O. T.

Catalog free for postal.

S. D. BUELL

Manufactures bee hives, and is agent for The A. I. Root Co.'s goods, which are sold at factory prices. Catalog sent free. Bees for sale. Beeswax wanted.

Union City, Mich.

Mr. A. I. Root's Writings

of Grand Traverse territory and Leelanau Co. are descriptive of Michigan's most beautiful section reached most conveniently via the

PERE MARQUETTE R. R.

For pamphlets of Michigan farm lands and the fruit belt, address J. E. Morrill, Manistee, Michigan.

\$15
15
30

DOUBLE YOUR SALARY

Don't spend spare time thinking what you might be if your salary were doubled! *Doing*, not thinking, will make your wish a reality. Our free booklet, "Are Your Hands Tied?" tells you what to do and how to do it. Thousands have already doubled or largely increased their salaries by following our plan. Under our guidance you can do the same. Act today! I. C. S. Text-books make it easy for those already at work to

Learn By Mail

Mechanical, Steam, Electrical, Civil, Mining, Telephone, and Telegraph Engineering; Shop and Foundry Practice; Mechanical Drawing; Architecture; Plumbing; Sheet-Metal Pattern Drafting; Chemistry; Ornamental Design; Lettering; Book-keeping; Stenography; English Branches; Teaching; Locomotive Running; Electrotherapeutics; German; Spanish; French.

Circular free. State subject that interests you.
INTERNATIONAL CORRESPONDENCE SCHOOLS,
Box 799, SCRANTON, PA.

AN EXPERT'S ADVICE

can be had free by writing us. Mr. H. M. Horton conducts this department in our great

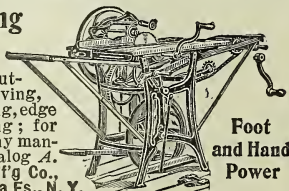
Poultry Supply House.

Every necessity of the poultry business carried, all of the highest quality. Also Standard Bred Poultry, Hatching Eggs, etc. Write us your troubles and your wants. Ask for catalogue D. Sent free.

W. J. Gibson & Co., (Inc.), Union Stock Yards, Chicago.

Wood-working Machinery.

For ripping, cross-cutting, mitering, grooving, boring, scroll-sawing, edge moulding, mortising; for working wood in any manner. Send for catalog A. The Seneca Falls M'tg Co., 44 Water St., Seneca Falls, N. Y.



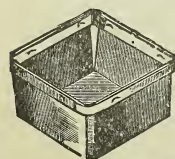
Foot
and Hand
Power

Fruit Packages of All Kinds.

— ALSO —

BEE-KEEPERS' SUPPLIES. . .

Order your supplies now before the busy season catches you. Price list free. Address



BERLIN FRUIT-BOX COMPANY,
Berlin Heights, - - Erie County, Ohio.

Seven Carloads of "WEED" New Process Foundation

Our Output for the
past twelve months.

Read
Your
Name
Thro
It



Look for this brand on each package.
Machinery and process patented.

Have you ever been annoyed by sagging and buckling of brood-combs? Have you ever seen bees gnaw holes through some brands during a slack spell in the early honey flow? Have you not had bees pull down a large portion of sheets of surplus; and, where no separators were used, spoil not only one comb but the two adjacent? These annoyances are unknown in apiaries where foundation of this brand is used.

The A. I. Root Co., Medina, O.



The "Star" Ventilator.

Storm-proof, effective; for ventilating all kinds of buildings, barns, stables, and factories of all kinds. Send for illustrated booklet

Merchant & Co., Inc.,
Philadelphia, Brooklyn,
New York, and Chicago.
M'n'rs High-grade Bright Tin



POULTRY PAPER. Illustrated, 20 pages, 25 cents per year. 4 months' trial 10 cents. Sample Free. 64-page practical poultry book free to yearly subscribers. Book alone 10 cents. Catalogue of poultry books free. *Poultry Advocate*, Syracuse, N. Y.



PAGE

Page Poultry Fence

heaviest and strongest made—fences poultry IN, and stock OUT. Dealers don't keep it. Write us. Page Woven Wire Fence Co., Box 5, Adrian, Michigan.



FENCE! STRONGEST MADE. Bull Strong, Chicken Tight. Sold to the Farmer at Wholesale Prices. Fully Warranted. Catalog Free. COILED SPRING FENCE CO. Box 101, Winchester, Indiana, U. S. A.

HIGH CARBON COILED SPRING WIRE X INDIANA STEEL & WIRE CO. CATALOGUE FREE. BOX 101 MUNCIE, INDIANA.

READY FOR

Prompt Delivery

Red-clover Untested Italian Queens: Each, \$1; six, \$ 5.70.
 Red-clover Tested Italian Queens: Each, \$2; six, 11.40.
 Red-clover Select T's'd It'n Queens: Each, \$3; six, 17.10.
 Italian Breeding Queens: Each, \$5.00, \$7.50, and \$10.00.
 Best Imported Italian Queens: Each, \$5.00.

If you are in a hurry, send us your order.

If you want good queens, send us your order.

We do not handle cheap queens.

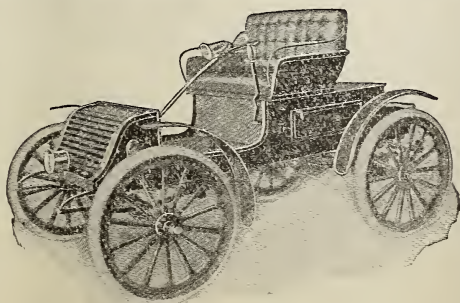
If you want Nuclei or Full Colonies, let us quote you prices. State how many you can use.

Gleanings in Bee Culture, one year, and an Untested Italian Queen, for only \$1.00. We have already mailed some premium queens, and expect to send them out within a week after orders are received. Don't delay if you want a queen early when she will do you the best service. Queen circular free.

The **A. I. Root Co., Medina, O.**

\$750 HYDRO CARBON

**Capacity :
100 - mile
Gasoline-
tank.**



**Capacity :
300-mile
Water-
tank.**

Weight 940 lbs.; seven-horse power actual. Will run at any speed up to 25 miles per hour, and climb any grade up to twenty per cent. For catalog, address

Friedman Automobile Co.,

3 East Van Buren St.,

Dept. B,

Chicago, Illinois.

Gleanings in Bee Culture

[Established in 1873.]

Devoted to Bees, Honey, and Home Interests.

Published Semi-monthly by

The A. I. Root Co., - - Medina, Ohio.

A. I. ROOT, Editor of Home and Gardening Dep'ts.
E. R. ROOT, Editor of Apicultural Dep't.
J. T. CALVERT, Bus. Mgr.
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TERMS. \$1.00 per annum; two years, \$1.50; three years, \$2.00; five years, \$3.00, *in advance*; or two copies to one address, \$1.50; three copies, \$2.00; five copies, \$3.75. The terms apply to the United States, Canada, and Mexico. To all other countries 48 cents per year extra for postage.

DISCONTINUANCES. The journal is sent until orders are received for its discontinuance. We give notice just before the subscription expires, and further notice if the first is not heeded. Any subscriber whose subscription has expired, wishing his journal discontinued, will please drop us a card at once; otherwise we shall assume that he wishes his journal continued, and will pay for it soon. Any one who does not like this plan may have his journal stopped after the time paid for by making his request when ordering.



BEESWAX DECLINED.

Until further notice we will pay 29c cash, or \$1 in trade, for average wax delivered here. We have a large supply on hand, and the market is somewhat easier than it was a few weeks ago. By July 1st the price will likely go still lower.

GLASS HONEY JARS.

Bear in mind we are supplied with a large stock of honey-jars of the various styles listed in our catalog, and can fill orders for these, both large and small, with promptness. Those using large quantities will do well to write us for prices, stating quantities and style used.

SECOND-HAND 60-LB. CANS.

We have on hand several hundred boxes of two 60-lb. cans, second hand, but in good condition, which we offer in ten-box lots at 45 cts.; 25 boxes or more at 40 cts. per box. Most of these cans have been used but once, and are bright inside, and in good condition. They will need washing out before being filled.

NEW BOARDMAN FEEDER-CAPS.

On another page we show the Boardman feeder with the new perforated cap on the pepper-box principle. These caps fit any standard Mason jars, being 2½ inches in diameter. Price of caps only 5 cts. each; 40 cts. for 10; by mail, 1 ct. each extra. No change in price of feeder complete with jar, or in flat without jar.

BUSINESS BOOMING.

There is very little change to report on the condition of ord-rs. We are still behind to the extent of 10 or 12 carloads for our dealers, some of whom are awaiting cars to assort up their stock so as to fill orders completely. We are crowded worst on sections. If any can use No. 2 in 4¼ x 2 or 4¼ x 1½, four beeways, or 4¼ x 1½ plain, 3½ x 5 x 1½ plain, or 4 x 5 x 1½ plain, we have a surplus of these sizes, especially the two first mentioned, which we should like to dispose of. There

are few places where a four-beeway section could not be used instead of a two-beeway, with the result that the more free communication by the extra openings would encourage the bees to enter more promptly the super. Over in Great Britain there are a great many more sections used with four beeways than with two, for this very reason.

GERMAN WAX-PRESS COVER.

To those who have had trouble with breakage to cover-casting of the German wax-press, we can supply for \$1.00 the new oak cross-bar reinforced with metal casting threaded to fit a ¾-inch screw 10 threads to inch, single lead, or 8 threads to inch, double lead, together with the lugs for attaching to the can and cover to fit each side of the bar to close the top of the can. This price is less than half what we would ordinarily charge for these parts, but is made with the view of our sharing in the cost of replacing the covers which have been broken in use. Although we tested the cast cover carefully before adopting it, we later found that too many of them broke in the hands of users to warrant continuing to furnish that style. To attach the new bar it will be necessary to drill four holes through the rim for riveting on the new lugs for clamping the bar to the can. The plunger-plate must be removed to insert the screw through the new bar, when it may be replaced. The first presses sent out had single lead screw 10 threads to the inch, while the later machines had double lead screw 8 threads to the inch. In ordering, be sure to specify for which style of screw you want the bar threaded to fit.

PAPER-BAG HONEY-PACKAGES—AN EXPLANATION.

Readers of GLEANINGS will please take notice that we have turned over to The A. I. Root Co. the paper-bag business. Our reason for doing this is that we were under difficulties as to printing and distribution. When we took up the matter of supplying bags to bee-keepers, for putting up extracted honey, we did not expect to have any demand worth while this year from eastern territory, and intended to put in a stock here and ship to western producers from Loveland this season, but we find a demand from the East as well as from the West, including Canada.

The Root Co. is situated nearer the factory than we, and has all necessary facilities for printing and shipping to bee-keepers, and can give a better service than we could, so we have decided to turn over the entire business to them, so all orders now in our hands will be filled from Medina; and all those contemplating ordering will direct to The A. I. Root Co. instead of to us. The senior member of this firm would also take occasion to thank the many bee-keepers who have written kind and complimentary letters relating to his article, in GLEANINGS for March 1. That article and the little advertisement in the "Wants" column brought replies from the United States and Canada, and from Mexico, England, France, and Holland. Loveland, Col. R. C. & E. AIKIN.

AIKIN HONEY-BAGS.

These are made of tough paper, straw color, printed in two colors, with blank space for name and address of producer or dealer, and extra-coated with paraffine. They have been thoroughly tested, and proven to be a success for candied extracted honey. See article in our March 1st issue for illustration and full particulars. We have four sizes which we can supply at the following prices:

2-LB. SIZE, 5 x 7½.	5-LB. SIZE, 7 x 10.
100.....\$.80	100.....\$1.20
500.....3.75	500.....5.50
1000.....7.00	1000.....10.50
5000 @.....6.00	5000 @.....10.00
3½-LB. SIZE, 6 x 9½.	10-LB. SIZE, 10 x 10½.
100.....\$1.00	100.....\$1.50
500.....4.75	500.....7.00
1000.....8.75	1000.....13.50
5000 @.....8.25	5000 @.....13.00

We will print in name and address of producer or dealer, in different quantities, at the following schedule of prices for any size:

Lots of 100.....	30 cts.
Lots of 250.....	50 cts.
Lots of 500.....	75 cts.
Lots of 1000.....	\$1.00.

For each additional 1000, add 50 cts. Each change of name and address counts as a separate order. For instance, 1000 bags printed with four different names and addresses, 250 of each, would be \$2.00; with ten different names, \$3.00, etc. As the bags must be print-

ed before they are made up and coated, we can not change the label except in lots of 10,000 or over. We have some plain 2-lb. size of dark-drab paper which we can furnish plain at \$2.00 per 1000 less than prices quoted above, or we can print a smaller special label in one color at above rates extra for printing.

HOME FLORICULTURE, BY EBEN E. REXFORD.

This is a new book treating on flowering and ornamental plants in house and garden. It contains 300 pages, fully illustrated. It tells all about making soil for potting, about potting plants, watering plants, about insects, etc. There is also a very interesting chapter relating to small greenhouses. In fact, the whole book is more particularly for home florists and amateur greenhouse-owners than for florists. It is not only fully up to date, but it is the best book on the subject for the money I know of. Price 90 cents; by mail, \$1.00.

Convention Notices.

The Texas Bee-keepers' Association will meet in annual convention at the Agricultural and Mechanical College, at College Station, Texas, July 7 to 10, inclusive, during the time of the annual meeting of the Texas Farmers' Congress. Cheap excursion rates on the railroads. A large crowd every year, and a jolly good time, as well as the meeting of your fellowmen, and the knowledge gained during the sessions. Grand exhibits of products. A good list of premiums offered. Bring your stuff, whatever you have.

Hunter, Texas. LOUIS H. SCHOLL, Sec'y.

DURING SEPTEMBER, 1901,

the United States Department of Agriculture imported a lot of queens from the Province of Bergamo, Italy, one of which was sent to me to be tested. For prolificness and industry she and her offspring are second to none, and I am now prepared to fill orders promptly with her daughters or the best golden queens at \$1.00 each or \$9.00 per dozen. M. O. office, Warrenton. W. H. Pridgen, Creek, Warren Co., N. C.

Bred for Work

Terrace queens have given best of satisfaction; bred from selected stock; best of workers; very gentle, and fine color. Warranted, \$1.00 each; six for \$5.00; dozen, \$9.00. Tested, \$1.25. Harold Horner, Terrace Apiaries, Mt. Holly, N. J.

100 = Mounted = Queen-cells

and one sample of the Stanley Cell-protector or Introducing-cage, for 70 cents postpaid. Arthur Stanley, Dixon, Illinois.

ITALIAN BEES FOR SALE!

Full colonies, \$1.00; three frames, with queen, \$2.25; two frames with queen, \$2.00; one frame, \$1.50; queen, \$1.00. Mrs. A. A. Simpson, Swarts, Pa.

PHACELIA TANACETIFOLIA, the great honey and forage plant, can be planted any time, while there is moisture. It blooms six weeks after sowing. Seed, 1 oz., 25 cts., postpaid. O. LUDENDORFF, Visalia, Cal.

RED-CLOVER ITALIAN QUEENS, guaranteed to work on red-clover; bred for business, in full colonies; honey-gathering and wintering qualities are prime object. Untested, \$1.00; tested, \$2.00 to \$1.50. After July 1, untested, 75c; tested, \$1.50 to \$3.50. Send for circular list. I. F. MILLER, Knox Dale, Pa.

FINE QUEENS FROM THE BLACK HILL APIARIES Golden and Long-tongue. Write for price list. Reference, G. F. Davidson & Son. Carver & Mathis, Props., Verdi, Texas.

TEXAS QUEENS FROM LONE STAR APIARIES. We are now ready to furnish you queens from the best stock of any race. These queens are equaled by few and inferior to none. Write for price list. G. F. Davidson & Son, Props., Fairview, Texas.

Wants and Exchange.

WANTED.—To sell black and hybrid queens, 30 cts. each. MRS. J. W. BACON, Waterloo, N. Y.

WANTED.—To sell a Barnes foot-power saw. H. A. JEPSON, Medford, Mass.

WANTED.—To receive your order with \$1.00 for a queen, that is reared with the business qualities in view. R. J. CARY, Norwalk, Conn.

WANTED.—Apiarists for the West Indies. Several of our correspondents want help. Write at once for particulars. THE A. I. ROOT CO., Medina, O.

WANTED.—To exchange or sell 50 colonies of Italian bees, for honey or cash. DAVID DANIEL, Hawthorn, Pa.

WANTED.—To sell single-comb White Leghorn eggs for hatching at \$1.00 for 26; \$3.00 for 100. J. P. WATTS, Kermmoor, Pa.

WANTED.—To exchange for honey, or cash, 60-lb. cans, good as new, per case of two cans, f. o. b. here, 40 cents. G. L. BUCHANAN, Holliday's Cove, W. Va.

WANTED.—To sell my farm of 102 acres and 40 colonies of bees; old age, the reason; correspondence solicited. WM. G. SNODGRASS, Montrose, Henry Co., Mo.

WANTED.—To sell for cash, 5-gal. square tin cans, used for honey, at about half price of new cans. For prices, etc., address OREL L. HERSHISER, 301 Huntington Ave., Buffalo, N. Y.

WANTED.—All the bulk comb, extracted, and section honey that we can buy in the State of Texas. We pay spot cash for honey. Write us now or when you have honey. THE HYDE BEE CO., Floresville, Tex.

WANTED.—To exchange copy of *New York Herald*, April 15, 1865, in good condition, containing detailed particulars of President Lincoln's assassination. Best offer gets it. ELIAS FOX, Hillsboro, Wis.

WANTED.—Users of power grinding-mills to write for circular of automatic cut-off which automatically stops the mill when hopper become empty. Especially adapted to Aermotor windmills. B. STRITTMATTER, Bradley Junction, Pa.

WANTED.—To sell at a bargain, a quantity of new comb-honey supers—8 and 10 frame complete, except sections—for standard 4½ sections. Also a lot of T-supers and supers with section-holders which have been used; all in fine condition, and many have sections and drawn comb in them. Hoffman worker combs wanted. F. B. CAVANAGH, Galt, Mich.

WANTED.—To sell 100 eight-frame hives in the flat Armstrong New Reversible, about the same as Heddon hive—frames 5x7 inside, self spacing, and hang on a right-angle piece at bottom; patent side to remove frames; brood-chamber in two sections; super same as hive only having six frames which hold four 4½x5 sections, or frames can be used for extracting, \$1.00 each in lots of ten. 800 patent reversible dovetailed frames 8½x17, 80c per 100; close on the Danz. frame in size. J. I. CHENOWETH, Albion, Iowa.

WANTED.—To sell S. W. ¼ of S. E. ¼ sec. 26, range 26, Crystal Lake Tp., Benzie Co., Mich.; 40 acres just outside corporation of Frankfort; a nearly finished cottage of six rooms, a small stable, 25 bearing apple-trees, a few peach-trees. From front porch can be seen a delightful view of the little city of Frankfort, Lake Michigan, harbor steamers, etc. Unexcelled as a summer home or a fruit-farm. Only a few hours from Toledo, Detroit, Chicago, Minneapolis, and other cities. Write Gen. Pass. Agent of Toledo & Ann Arbor R. R., Toledo, Ohio, for pamphlet describing Frankfort. Cheap at \$2200; if bought soon can be secured at \$1400. Also for sale 160 acres, 15 miles east of Frankfort; only \$2.50 per acre. 25 acres ready for the plow. Write C. L. Linkletter, Agent, Frankfort, Mich., or W. A. HOBBS, Owlet, Traer, Iowa.

PAGE & LYON,

New London, Wisconsin.

MANUFACTURERS OF
AND DEALERS IN . . .

BEE-KEEPERS' SUPPLIES. . . .

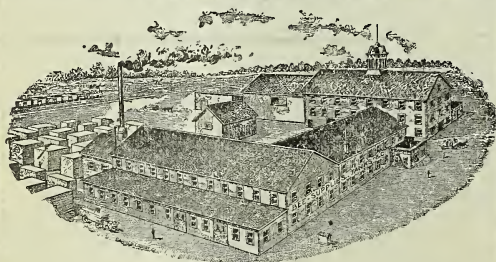
Send for Our Free New Illustrated
Catalog and Price List.

We Have Not Moved.

The government, recognizing the necessity of a great and growing business enterprise, for better mail service has given us a postoffice on our premises, which enables us to change mails with the passing trains instead of through the Wetumpka, Alabama, postoffice more than a mile distant. This gives us our mails about two hours earlier, and also one hour for making up outgoing mail. This will be particularly helpful in our queen business. We are now booking orders for Italian queens, Long-tongued and Leather-colored; both good.

J. M. Jenkins,
Honeysuckle, Alabama.

Shipping-point and Money-order
Office at Wetumpka, Alabama.



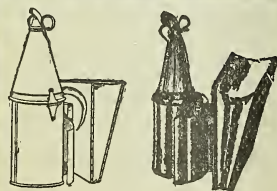
Kretschmer M'fg Company,
Box 60, Red Oak, Iowa.

BEE- SUPPLIES!

Best-equipped factory in the West; carry a large stock and greatest variety of every thing needed in the apary, assuring BEST goods at the LOWEST prices, and prompt shipment. We want every bee-keeper to have our FREE ILLUSTRATED CATALOG, and read description of Alternating Hives, Ferguson Supers. *Write at once for catalog.*

Agencies.

Trester Supply Company, Lincoln, Neb.
Shugart & Ouren, Council Bluffs, Iowa,
Foster Lumber Company, Lamar, Colo.



BINGHAM SMOKER.

Dear Sir:—Inclosed find \$1.75. Please send one brass smoke-engine. I have one already. It is the best smoker I ever used.

Truly yours,
HENRY SCHMIDT, Hutto, Tex.

MADE TO ORDER

Bingham Brass Smokers.

Made of sheet brass, which does not rust or burn out; should last a lifetime. You need one, but they cost 25 cts. more than tin of the same size. The little open cut shows our brass hinge put on the three larger sizes. No wonder Bingham's four-inch smoke-engine goes without puffing, and does not drop ink drops. The perforated steel fire-grate has 881 holes to air the fuel and support the fire.

Heavy tin smoke-engine, 4-inch stove, per mail, \$1.50; 3½-inch, \$1.10; 3-inch, \$1.00; 2½-inch, 90c; 2-inch, 65c. Bingham smokers are the originals, and have all the improvements, and have been the standard of excellence for 23 years. Only three larger ones brass.

T. F. Bingham, Farwell, Michigan.



Established 1884.

BEE-KEEPERS' SUPPLIES!

In placing your orders for the coming season of 1903 do not forget that we always carry a stock of THE A. I. ROOT COMPANY'S goods that are needed in a well-equipped apiary. We can sell you these goods as cheap as they can be had from the factory, owing that we get carload shipments from which we can supply your wants on short notice, and at a saving of freight.

We ask a trial order to convince you that we can serve you right. Send for our 40-page catalog, free.

 BEESWAX WANTED. 

JNO. NEBEL & SON,
High Hill, Missouri.

Oregon Bee-keepers



For years we have supplied you with a portion of your requirements in bee-keepers' Supplies, for which we thank you. We are better prepared than ever to take good care of orders this season. We have acquired the business of Buell Lamberson's Sons, of this place, and have the agency for this State for

The A. I. Root Co., Medina, Ohio.

One carload is already on the way, and others will follow. If you require special goods or anything not usually kept in Western stocks, we can get it for you on our next car.

Seeds, Fertilizers, Trees, Garden Tools, Poultry and Bee Supplies.

Portland Seed Company,
Portland, Oregon.

Headquarters in CALIFORNIA!

We wish to remind GLEANINGS readers that we are again ready to serve them with whatever they require in Bee-keepers' Supplies. We not only have a good assortment of our own manufacture but we can furnish a

Full Line of Root's Sundries

such as Smokers, Sections, Cowan Extractors, etc. Let us have your name and address at once, and we will send you our catalog.

Union Hive & Box Co.
Los Angeles, Cal.

Montana, Minnesota, Dakota, and West'n Wisconsin BEE-KEEPERS

Our 33d annual catalog (for 1903, 92d edition) is now ready. Send for a copy at once. We have a full line of goods in stock, and can fill orders promptly. Save freight by ordering of the St. Paul branch. **Bees and Queens.** Orders booked now for spring delivery. **Honey and Wax.** We handle honey and wax. Write for particulars.

The A. I. ROOT COMPANY
Northwestern Branch,
1026 Mississippi St.,
ST. PAUL, MINNESOTA
H. G. Acklin, Manager.

Texas Bee-keepers.

STOCK.—Our warehouse is now stocked with a good assortment of Hives, Sections, Extractors, and other supplies direct from Medina.

PROMPTNESS.—We can therefore fill your orders promptly. Do not suffer long delay by ordering from some distant point but send orders here.

HEADQUARTERS for bee-keepers in San Antonio. Whenever you visit San Antonio you are invited to call at our office and make it your headquarters. See our display of supplies. Leading bee-journals on file for your perusal too.

WANTED.—Beeswax and Honey. Write for particulars.

The A. I. Root Co.,
438 West Houston Street,
San Antonio, Texas.

BEEKEEPERS *Notice*

We sell the Root goods here at Root's factory prices, which means the freight is paid to Des Moines, Iowa.

Immense stock and every variety of the best up-to-date goods now on hand packed for prompt shipment.

Satisfaction is guaranteed on every order sent us. Thousands have been pleased with their goods from us. We can satisfy you.

Write for estimates, sending list of what you will need, and get our discounts for early orders. We will save you money. Send to-day for 1903 catalog.

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